

Repair Manual

Golf Variant 2007 ➤

Golf Variant 2010 ➤

Jetta 2005 ➤

Jetta 2011 ➤

6-Speed Manual Transmission 02Q

Edition 05.2021



List of Workshop Manual Repair Groups

Repair Group

00 - General, Technical Data

30 - Clutch

34 - Controls, Housing

35 - Gears, Shafts

39 - Final Drive, Differential

Technical information should always be available to the foremen and mechanics, because their careful and constant adherence to the instructions is essential to ensure vehicle road-worthiness and safety. In addition, the normal basic safety precautions for working on motor vehicles must, as a matter of course, be observed.

All rights reserved.

No reproduction without prior agreement from publisher.



Contents

00 - General, Technical Data	1
1 Transmission Identification - FWD	1
1.1 Location on Transmission	1
1.2 Codes, Transmission Allocation and Capacities - FWD	2
2 Transmission Identification - AWD	7
2.1 Location on Transmission	7
2.2 Codes, Transmission Allocation and Capacities - AWD	8
3 Overview - Drivetrain, FWD	10
4 Overview - Drivetrain, AWD	12
5 Transmission Ratio "i", Calculating	14
6 Notes on Performance Test, AWD	15
7 General Repair Information	16
7.1 Safety Precautions, Vehicles with Start/Stop System	16
7.2 Contact Corrosion	16
7.3 Special Tools	16
7.4 Components	16
30 - Clutch	22
1 Drivetrain, Troubleshooting	22
2 Clutch Mechanism, Servicing	23
2.1 Overview	23
2.2 Overview - Pedal Cluster	23
2.3 Over-Center Spring, Removing and Installing	25
2.4 Clutch Pedal, Removing and Installing	32
2.5 Mounting Bracket, Removing and Installing	38
2.6 Clutch Master Cylinder, Removing and Installing	46
2.7 Clutch Position Sensor G476, Removing and Installing	48
2.8 Overview - Hydraulics, LHD	52
2.9 Clutch Mechanism, Bleeding	55
3 Clutch Release Mechanism, Servicing	57
3.1 Line Assembly and Bleeder on the Clutch Slave Cylinder, Removing and Installing	60
3.2 Clutch Slave Cylinder with Release Bearing, Removing and Installing	60
3.3 Hose/Line Assembly or Pipe, Removing and Installing	62
3.4 Input Shaft Seal, Replacing	64
4 Clutch, Servicing, Diesel	67
4.1 Determining Clutch Manufacturer	68
4.2 "Sachs" Clutch, Removing and Installing	69
4.3 "Sachs" Clutch, Servicing	73
4.4 "LuK" Clutch, Removing and Installing	74
4.5 Clutch, Servicing, "LuK"	78
5 Clutch, Servicing, Gasoline	79
5.1 Clutch, Servicing	80
5.2 Clutch, Removing and Installing	81
34 - Controls, Housing	85
1 Shift Mechanism, Servicing	85
1.1 Shift Mechanism Installation Position	85
1.2 Overview - Shift Mechanism	86
1.3 Overview - Gearshift Knob and Cover	87
1.4 Boot with Shifter Knob and Noise Insulation, Removing and Installing	87
1.5 Overview - Gearshift Lever and Gearshift Housing, through 10/2006	90



1.6	Overview - Gearshift Lever and Gearshift Housing, from 11/2006	93
1.7	Overview - Operating Cables	102
1.8	Plastic Relay Lever	108
1.9	Shift Mechanism, Removing and Installing	113
1.10	Gearshift Cable and Selector Cable, Removing and Installing	119
1.11	Shift Mechanism, Adjusting	121
2	Transmission, Removing and Installing, Jetta from MY 2005 , Golf Wagon from MY 2007 and Golf Wagon from MY 2010, Vehicles with Diesel Engine and FWD	125
2.1	Transmission, Removing	125
2.2	Transmission, Installing	141
2.3	Tightening Specifications	153
3	Transmission, Removing and Installing, Jetta from MY 2005 , Golf Wagon from MY 2007 and Golf Wagon from MY 2010, Vehicles with Gasoline Engine and FWD	155
3.1	Transmission, Removing	155
3.2	Transmission, Installing	171
3.3	Tightening Specifications	182
4	Transmission, Removing and Installing, Jetta from MY 2011, Diesel and Gasoline	184
4.1	Transmission, Removing	184
4.2	Transmission, Installing	200
4.3	Tightening Specifications	211
5	Transmission, Removing and Installing, Jetta from MY 2005 , Golf Wagon from MY 2007 and Golf Wagon from MY 2010, Vehicles with AWD	213
5.1	Transmission, Removing and Installing, Vehicles with Turbo Diesel Engine	213
6	Transmission, Transporting	247
6.1	FWD Transmission, Transporting	247
6.2	AWD Transmission, Transporting	248
7	Transmission, Securing to Engine/Transmission Holder	250
8	Transmission Fluid, Checking	252
8.1	Transmission Fluid Level, Checking, Manual Transmission with Fluid Filler Plug	252
8.2	Transmission Fluid Level, Checking, Manual Transmission without Fluid Filler Plug	253
8.3	Transmission Fluid, Draining and Filling, Only Manual Transmission "without" Fluid Filler Plug	254
8.4	Fluid Fill or Drain Plug Tightening Specification	256
9	Bevel Box, Removing and Installing	257
9.1	Bevel Box, TDI Without Particulate Filter, Removing and Installing	257
9.2	Bevel Box, Removing and Installing, Vehicles with a Turbo Diesel Engine with a Particulate Filter, through Approximately 10/2009	268
9.3	Bevel Box, Removing and Installing, Vehicles with a Turbo Diesel Engine with a Particulate Filter, through Approximately 11/2009	283
10	Gear Oil in Bevel Box, Checking or Filling	294
10.1	Gear Oil Level in Bevel Box, Checking	295
10.2	Gear Oil in Bevel Box, Filling	296
11	Transmission, Disassembling and Assembling	301
11.1	FWD - Transmission Overview	301
11.2	Transmission Overview - AWD	301
11.3	Overview - FWD	302
11.4	Overview - AWD	304
11.5	Transmission Housing and Gearshift Mechanism, Removing and Installing	306
11.6	Overview - Input Shaft, Output Shafts, Differentials and Shift Rods, Removing and Installing, for FWD Vehicles	309
11.7	Overview - Input Shaft, Output Shaft, Differential, Bevel Box and Shift Rods, Removing and Installing, for AWD Vehicles	312
11.8	Assembly Sequence, Transmission »without« Circlip A for Metal Input Shaft Cap	314
11.9	Assembly Sequence: I = Transmission »with« a Securing Ring A for Input Shaft Metal Cover; II = Transmission with Plastic Cover for Input Shaft	333
12	Transmission Housing, Servicing	354



13	Clutch Housing, Servicing	367
14	Shift Unit, Servicing	373
14.1	Selector Shaft Seal, Replacing	375
15	Shift Forks, Servicing	379
35 -	Gears, Shafts	383
1	Input Shaft	383
1.1	Overview - Input Shaft	383
1.2	Input Shaft, Disassembling and Assembling	385
2	1st through 4th Gear Output Shaft	393
2.1	Overview - Output Shaft, 1st to 4th Gears	393
2.2	1st to 4th Gear Output Shaft, Disassembling and Assembling	396
2.3	1st through 4th Gear Output Shaft, Adjusting	428
3	5th, 6th and Reverse Gear Output Shaft	434
3.1	Overview - Input Shaft, 5th/6th and Reverse Gears	434
3.2	5th/6th and Reverse Gear Output Shaft, Disassembling and Assembling	436
3.3	5th/6th and Reverse Gear Output Shaft, Adjusting	448
39 -	Final Drive, Differential	455
1	Flange Shaft Seals, Manual Transmission Installed, Replacing for FWD Vehicles	455
1.1	Left Flange Shaft Seal, Replacing	455
1.2	Right Flange Shaft Seal, Replacing	457
2	Flange Shaft Seals and Bevel Box, Replacing for AWD Vehicles (Manual Transmission already Installed)	461
2.1	Left Flange Shaft Seal, Replacing	461
2.2	Right Flange Shaft Seal, Replacing	461
2.3	Bevel Box Seal, Replacing, with Manual Transmission Installed	465
3	Overview - Seals, Flange Shaft Bearing and Output Flange Bearing Inside the Bevel Box	468
3.1	Bevel Box, Removing and Installing, Manual Transmission Removed	471
3.2	Gasket on Bevel Box between Manual Transmission and Bevel Box, Replacing	473
3.3	Bevel Box Output Flange Seal, Replacing, Bevel Box Removed	474
3.4	Output Flange, Replacing and Determining New Output Flange Shim, Bevel Box Removed	487
3.5	Needle Bearing (Polygon Bearing) and Seal on Right Flange Shaft, Replacing	487
4	Adjustment Overview	494
5	Differential	495
5.1	Differential, Disassembling and Assembling, FWD	495
5.2	Differential, Disassembling and Assembling, AWD	503
5.3	Differential, Adjusting	513



00 – General, Technical Data

1 Transmission Identification - FWD

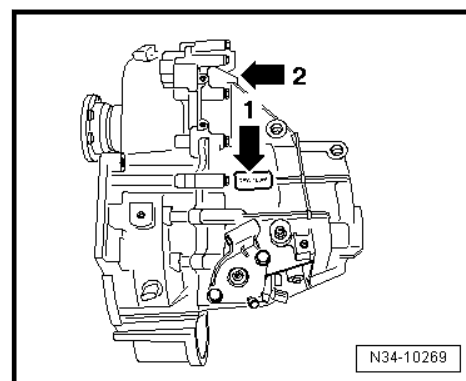
(Edition 05.2021)

The 6-speed manual transmission 02Q is installed with a 4-cylinder engine in the Jetta from MY 2005, the Golf Wagon from MY 2007, the Golf Wagon from MY 2010 and the Jetta from MY 2011.

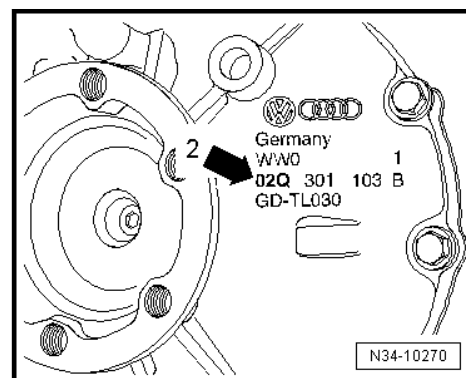
Allocation. Refer to ➔ [T1.2 Transmission Allocation and Capacities - FWD](#), page 2.

1.1 Location on Transmission

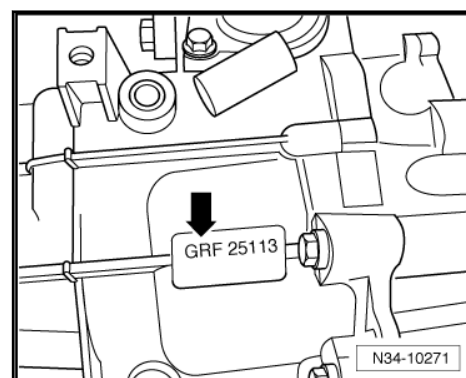
Code letters and build date -arrow 1- manual transmission 02Q
-arrow 2-



Manual Transmission 02Q -arrow 2-



Transmission codes and production date -arrow-





Example:	GRF	25	11	3
	Codes	Day	Month	Year (2003) of manufacture

Additional data and information is provided by the factory.



Note

The transmission code is also listed on the vehicle data label.

1.2 Codes, Transmission Allocation and Capacities - FWD

Manual Transmission		6-speed 02Q FWD		
Codes		GRF	GVT	GXC
Manufactured	from through	05/2005 11/2005	05/2005 11/2005	07/2006 07/2006
Allocation	Type	Jetta from MY 2005 Golf Wagon from MY 2007	Jetta from MY 2005 Golf Wagon from MY 2007	Jetta from MY 2005 Golf Wagon from MY 2007
	Engine	2.0L - 103 kW Turbo diesel	2.0L - 147 kW Turbo FSI	2.0L - 125 kW Turbo-Diesel
Ratio: Z ₂ : Z ₁	Final drive I ¹⁾	69 : 20 = 3.450	71 : 18 = 3.944	71 : 18 = 3.944
	Final drive II ²⁾	69 : 25 = 2.760	71 : 23 = 3.087	71 : 23 = 3.087
Manual Transmission Capacity		2.3 liter	2.3 liter	2.3 liter
Drive Axle Flange Diameter		107 mm	107 mm	107 mm
¹⁾ Final drive for 1st through 4th gear ²⁾ Final drive for 5th gear, 6th gear and reverse gear • Refer to the ⇒ Electronic Parts Catalog (ETKA) for the following information. ♦ The individual gear ratios ♦ Transmission fluid specification ♦ Clutch plate and pressure plate allocation				

Manual Transmission		6-speed 02Q FWD		
Codes		HDV	HVS	JLU
Manufactured	from through	05/2005	07/2006	05/2006 05/2007
Allocation	Type	Jetta from MY 2005 Golf Wagon from MY 2007	Jetta from MY 2005 Golf Wagon from MY 2007	Jetta from MY 2005 Golf Wagon from MY 2007
	Engine	2.0L - 96 kW turbo diesel 2.0L - 100 kW turbo diesel 2.0L - 103 kW turbo diesel	2.0L - 125 kW Turbo-Diesel	2.0L - 100 kW turbo diesel 2.0L - 103 kW turbo diesel
Ratio: Z ₂ : Z ₁	Final drive I ¹⁾	69 : 20 = 3.450	70 : 19 = 3.684	72 : 17 = 4.235
	Final drive II ²⁾	69 : 25 = 2.760	70 : 24 = 2.917	72 : 22 = 3.273
Manual Transmission Capacity		2.3 liter	2.3 liter	2.3 liters
Drive Axle Flange Diameter		107 mm	107 mm	107 mm



Manual Transmission	6-speed 02Q FWD		
Codes	HDV	HVS	JLU
<p>1) Final drive for 1st through 4th gear 2) Final drive for 5th gear, 6th gear and reverse gear</p> <ul style="list-style-type: none"> Refer to the ⇒ Electronic Parts Catalog (ETKA) for the following information. ◆ The individual gear ratios ◆ Transmission fluid specification ◆ Clutch plate and pressure plate allocation 			

Manual Transmission		6-speed 02Q FWD		
Codes		JLW	JMA	KDN
Manufactured	from through	05/2006 05/2007	06/2006 06/2007	05/2007 01/2008
Allocation	Type	Jetta from MY 2005 Golf Wagon from MY 2007	Jetta from MY 2005	Jetta from MY 2005 Golf Wagon from MY 2007
	Engine	2.0L - 147 kW Turbo FSI	2.0L - 125 kW Turbo diesel	2.0L - 100 kW Turbo diesel 2.0L - 103 kW Turbo diesel
Ratio: Z ₂ : Z ₁	Final drive I ¹⁾	71 : 18 = 3.944	70 : 19 = 3.684	69 : 20 = 3.450
	Final drive II ²⁾	71 : 23 = 3.087	70 : 24 = 2.917	69 : 25 = 2.760
Manual Transmission Capacity		2.3 liter	2.3 liter	2.3 liters
Drive Axle Flange Diameter		107 mm	107 mm	107 mm
<div>1) Final drive for 1st through 4th gear</div> <div>2) Final drive for 5th gear, 6th gear and reverse gear</div> <div>• Refer to the ⇒ Electronic Parts Catalog (ETKA) for the following information.</div> <div>◆ The individual gear ratios</div> <div>◆ Transmission fluid specification</div> <div>◆ Clutch plate and pressure plate allocation</div>				

Manual Transmission		6-speed 02Q FWD		
Codes		KDQ	KDS	KNS
Manufactured	from through	07/2007 03/2008	07/2007 06/2008	11/2007 10/2008
Allocation	Type	Jetta from MY 2005 Golf Wagon from MY 2007	Jetta from MY 2005	Jetta from MY 2005 Golf Wagon from MY 2007 Golf Wagon from MY 2010
	Engine	2.0L - 147 kW Turbo FSI	2.0L - 125 kW Turbo diesel	2.0L - 100 kW Turbo diesel 2.0L - 103 kW Turbo diesel
Ratio: Z ₂ : Z ₁	Final drive I ¹⁾	71 : 18 = 3.944	70 : 19 = 3.684	69 : 20 = 3.450
	Final drive II ²⁾	71 : 23 = 3.087	70 : 24 = 2.917	69 : 25 = 2.760
Manual Transmission Capacity		2.3 liter	2.3 liter	2.3 liters
Drive Axle Flange Diameter		107 mm	107 mm	107 mm



Manual Transmission		6-speed 02Q FWD		
Codes		KDQ	KDS	KNS
<p>1) Final drive for 1st through 4th gear 2) Final drive for 5th gear, 6th gear and reverse gear</p> <ul style="list-style-type: none"> Refer to the ⇒ Electronic Parts Catalog (ETKA) for the following information. The individual gear ratios Transmission fluid specification Clutch plate and pressure plate allocation 				

Manual Transmission		6-speed 02Q FWD		
Codes		KNU	KNY	KRM
Manufactured	from through	11/2007 02/2009	02/2008 10/2008	05/2007 07/2010
Allocation	Type	Jetta from MY 2005 Golf Wagon from MY 2007	Jetta from MY 2005	Jetta from MY 2005 Golf Wagon from MY 2007 Golf Wagon from MY 2010
	Engine	2.0L - 147 kW 2.0L - 155 kW	2.0L - 125 kW Turbo diesel	2.0L - 100 kW Turbo diesel 2.0L - 103 kW Turbo diesel
Ratio: Z ₂ : Z ₁	Final drive I ¹⁾	71 : 18 = 3.944	70 : 19 = 3.684	69 : 20 = 3.450
	Final drive II ²⁾	71 : 23 = 3.087	70 : 24 = 2.917	69 : 25 = 2.760
Manual Transmission Capacity		2.3 liter	2.3 liters	2.3 liters
Drive Axle Flange Diameter		107 mm	107 mm	107 mm
<p>1) Final drive for 1st through 4th gear 2) Final drive for 5th gear, 6th gear and reverse gear</p> <ul style="list-style-type: none"> Refer to the ⇒ Electronic Parts Catalog (ETKA) for the following information. The individual gear ratios Transmission fluid specification Clutch plate and pressure plate allocation 				

Manual Transmission		6-speed 02Q FWD		
Codes		KXX	KXZ	KZS
Manufactured	from through	05/2009	05/2009	05/2009
Allocation	Type	Jetta from MY 2005 Golf Wagon from MY 2007	Jetta from MY 2005 Golf Wagon from MY 2007	Jetta from MY 2005 Golf Wagon from MY 2007 Jetta from MY 2011
	Engine	2.0L - 100 kW Turbo diesel 2.0L - 103 kW Turbo diesel	2.0L - 100 kW turbo diesel 2.0L - 103 kW turbo diesel 2.0L - 125 kW turbo diesel	2.0L - 155 kW 2.0L - 147 kW
Ratio: Z ₂ : Z ₁	Final drive I ¹⁾	69 : 20 = 3.450	70 : 19 = 3.684	70 : 19 = 3.684
	Final drive II ²⁾	69 : 25 = 2.760	70 : 24 = 2.917	70 : 24 = 2.917



Manual Transmission	6-speed 02Q FWD		
Codes	KXX	KXZ	KZS
Manual Transmission Capacity	2.3 liters	2.3 liter	2.3 liters
Drive Axle Flange Diameter	107 mm	107 mm	107 mm
<p>1) Final drive for 1st through 4th gear 2) Final drive for 5th gear, 6th gear and reverse gear • Refer to the ⇒ Electronic Parts Catalog (ETKA) for the following information.</p> <p>◆ The individual gear ratios ◆ Transmission fluid specification ◆ Clutch plate and pressure plate allocation</p>			

Manual Transmission	6-speed 02Q FWD		
Codes	LHD	MDL	NFN
Manufactured from through	10/2008	11/2009	05/2009
Allocation Type	Jetta from MY 2005 Golf Wagon from MY 2007 Golf Wagon from MY 2010 Jetta from MY 2011	Jetta from MY 2011	Jetta from MY 2005
Engine	2.0L - 100 kW Turbo diesel 2.0L - 103 kW Turbo diesel	2.0L - 147 kW	2.0L - 125 kW Turbo diesel
Ratio: Z ₂ : Z ₁	Final drive I ¹⁾	69 : 20 = 3.450	70 : 19 = 3.684
	Final drive II ²⁾	69 : 25 = 2.760	70 : 24 = 2.917
Manual Transmission Capacity	2.3 liter	2.3 liter	2.3 liter
Drive Axle Flange Diameter	107 mm	107 mm	107 mm
<p>1) Final drive for 1st through 4th gear 2) Final drive for 5th gear, 6th gear and reverse gear • Refer to the ⇒ Electronic Parts Catalog (ETKA) for the following information.</p> <p>◆ The individual gear ratios ◆ Transmission fluid specification ◆ Clutch plate and pressure plate allocation</p>			

Manual Transmission	6-speed 02Q FWD		
Codes	NFP	PDA	
Manufactured from through	05/2010	12/2012	
Allocation Type	Golf Wagon from MY 2010	Jetta from MY 2011	
Engine	2.0L - 103 kW Turbo diesel	2.0L - 155 KW	
Ratio: Z ₂ : Z ₁	Final drive I ¹⁾	69 : 20 = 3.450	70 : 19 = 3.684
	Final drive II ²⁾	69 : 25 = 2.760	70 : 24 = 2.917
Manual Transmission Capacity	2.3 liter	2.3 liter	
Drive Axle Flange Diameter	107 mm	107 mm	



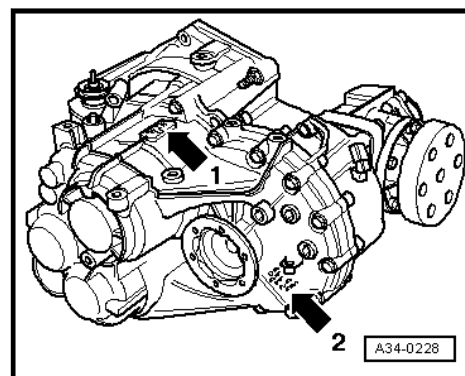
Manual Transmission	6-speed 02Q FWD		
Codes	NFP	PDA	
<p>1) Final drive for 1st through 4th gear 2) Final drive for 5th gear, 6th gear and reverse gear</p> <ul style="list-style-type: none">• Refer to the ⇒ Electronic Parts Catalog (ETKA) for the following information. <ul style="list-style-type: none">◆ The individual gear ratios◆ Transmission fluid specification◆ Clutch plate and pressure plate allocation			



2 Transmission Identification - AWD

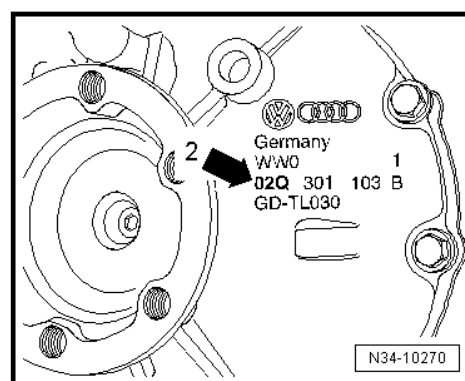
The 6 speed manual transmission 02Q AWD is installed along with the 4 cylinder turbo diesel engine in the Jetta from MY 2005, the Golf Wagon from MY 2007, and the Golf Wagon from MY 2010.

2.1 Location on Transmission

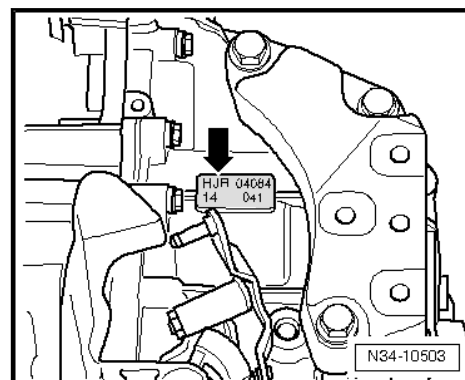


Code and production date -arrow 1-; manual transmission 02Q AWD -arrow 2-

Manual Transmission 02Q AWD -arrow 2-



Code and Production Date -arrow-



Example:	HJR	04	08	4
	Codes	Day	Month	Year (2004) of manufacture



Additional data and information is provided by the factory.



Note

The transmission code is also listed in the vehicle data plates.

2.2 Codes, Transmission Allocation and Capacities - AWD

Manual Transmission		6-Speed 02Q AWD		
Codes		FWZ	JLS	JYS
Manufactured	from through	08/2004 07/2007	03/2006 05/2007	05/2007 11/2007
Allocation	Type	Jetta from MY 2005 Golf Wagon from MY 2007	Golf Wagon from MY 2007	Golf Wagon from MY 2007
	Engine	1.9L - 77 kW Turbo diesel	1.9L - 77 kW Turbo diesel	1.9L - 77 kW Turbo diesel
Ratio: Z ₂ : Z ₁	Final drive I ¹⁾	72 : 17 = 4.235	72 : 17 = 4.235	72 : 17 = 4.235
	Final drive II ²⁾	72 : 22 = 3.273	72 : 22 = 3.273	72 : 22 = 3.273
Manual Transmission Capacity		2.3 liter		
Bevel box capacity		0.9 liters		
Drive Axle Flange Diameter		107 mm		
¹⁾ Final drive for 1st through 4th gear ²⁾ Final drive for 5th gear, 6th gear and reverse gear <ul style="list-style-type: none">• Refer to the ⇒ Electronic Parts Catalog (ETKA) for the following information.◆ The individual gear ratios◆ Transmission fluid specification◆ Clutch plate and pressure plate allocation◆ Bevel box gear oil◆ Rear final drive allocation				

Manual Transmission		6-Speed 02Q AWD		
Codes		KDX	KNQ	KXV
Manufactured	from through	05/2007 05/2008	02/2008	07/2009
Allocation	Type	Golf Wagon from MY 2007	Golf Wagon from MY 2007 Golf Wagon from MY 2010	Golf Wagon from MY 2007
	Engine	1.9L - 77 kW Turbo diesel	1.9L - 77 kW Turbo diesel 1.6L - 77 kW Turbo diesel	1.9L - 77 kW Turbo diesel
Ratio: Z ₂ : Z ₁	Final drive I ¹⁾	72 : 17 = 4.235	72 : 17 = 4.235	72 : 17 = 4.235
	Final drive II ²⁾	72 : 22 = 3.273	72 : 22 = 3.273	72 : 22 = 3.273
Manual Transmission Capacity		2.3 liter		
Bevel box capacity		0.9 liters		
Drive Axle Flange Diameter		107 mm		



Manual Transmission	6-Speed 02Q AWD		
Codes	KDX	KNQ	KXV
<p>1) Final drive for 1st through 4th gear 2) Final drive for 5th gear, 6th gear and reverse gear</p> <ul style="list-style-type: none"> Refer to the ➤ Electronic Parts Catalog (ETKA) for the following information. <ul style="list-style-type: none"> ◆ The individual gear ratios ◆ Transmission fluid specification ◆ Clutch plate and pressure plate allocation ◆ Bevel box gear oil ◆ Rear final drive allocation 			

Manual Transmission		6-Speed 02Q AWD		
Codes		LNN		
Manufactured	from through	07/2009		
Allocation	Type	Golf Wagon from MY 2010		
	Engine	1.6L - 77 kW turbo diesel		
Ratio: Z ₂ : Z ₁	Final drive I ¹⁾	72 : 17 = 4.235		
	Final drive II ²⁾	72 : 22 = 3.273		
Manual Transmission Capacity		2.3 liter		
Bevel box capacity		0.9 liters		
Drive Axle Flange Diameter		107 mm		
<p>¹⁾ Final drive for 1st through 4th gear</p> <p>²⁾ Final drive for 5th gear, 6th gear and reverse gear</p> <ul style="list-style-type: none">• Refer to the ⇒ Electronic Parts Catalog (ETKA) for the following information. <ul style="list-style-type: none">◆ The individual gear ratios◆ Transmission fluid specification◆ Clutch plate and pressure plate allocation◆ Bevel box gear oil◆ Rear final drive allocation				

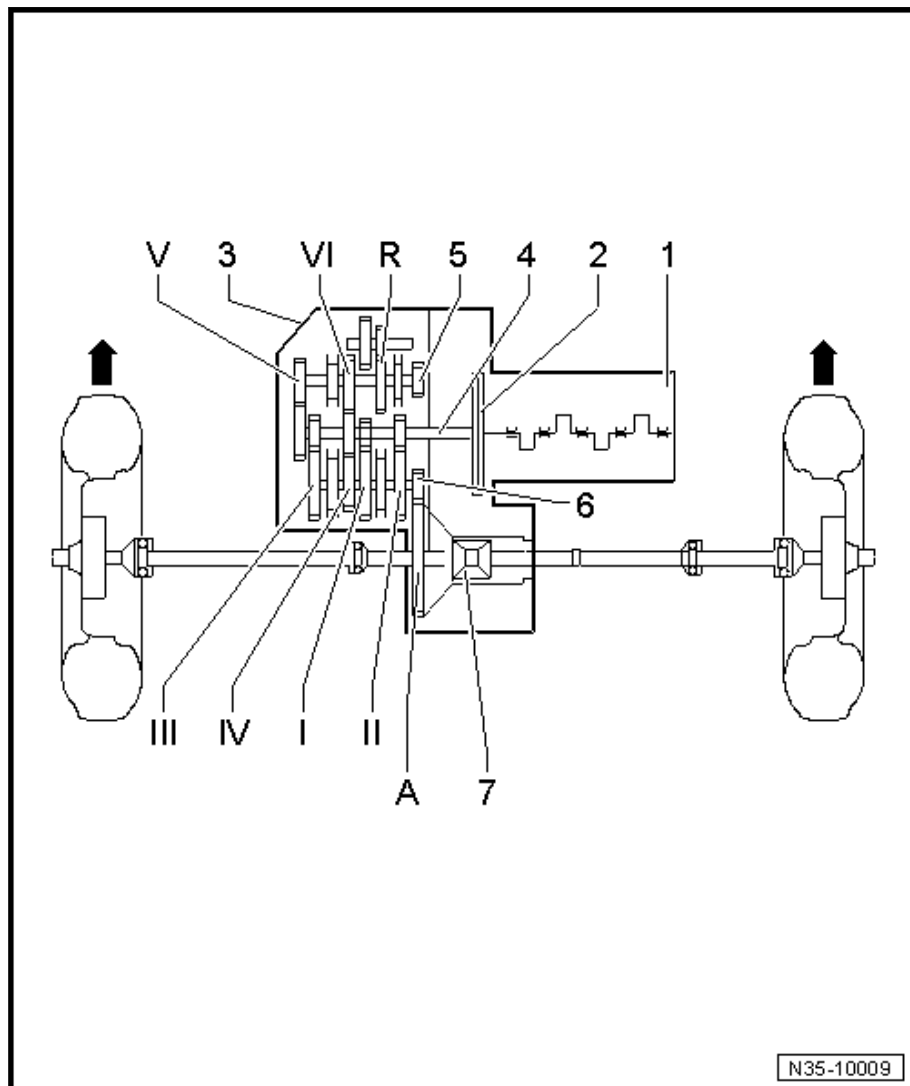


3 Overview - Drivetrain, FWD

Name

-Arrows- point in the direction of travel

- 1 - Engine
- 2 - Clutch
- 3 - Manual Transmission
- 4 - Input Shaft
- 5 - Output shaft for 5th, 6th and reverse gears (output shaft II)
- 6 - Output Shaft for 1st through 4th Gear (Output Shaft I)
- 7 - Differential

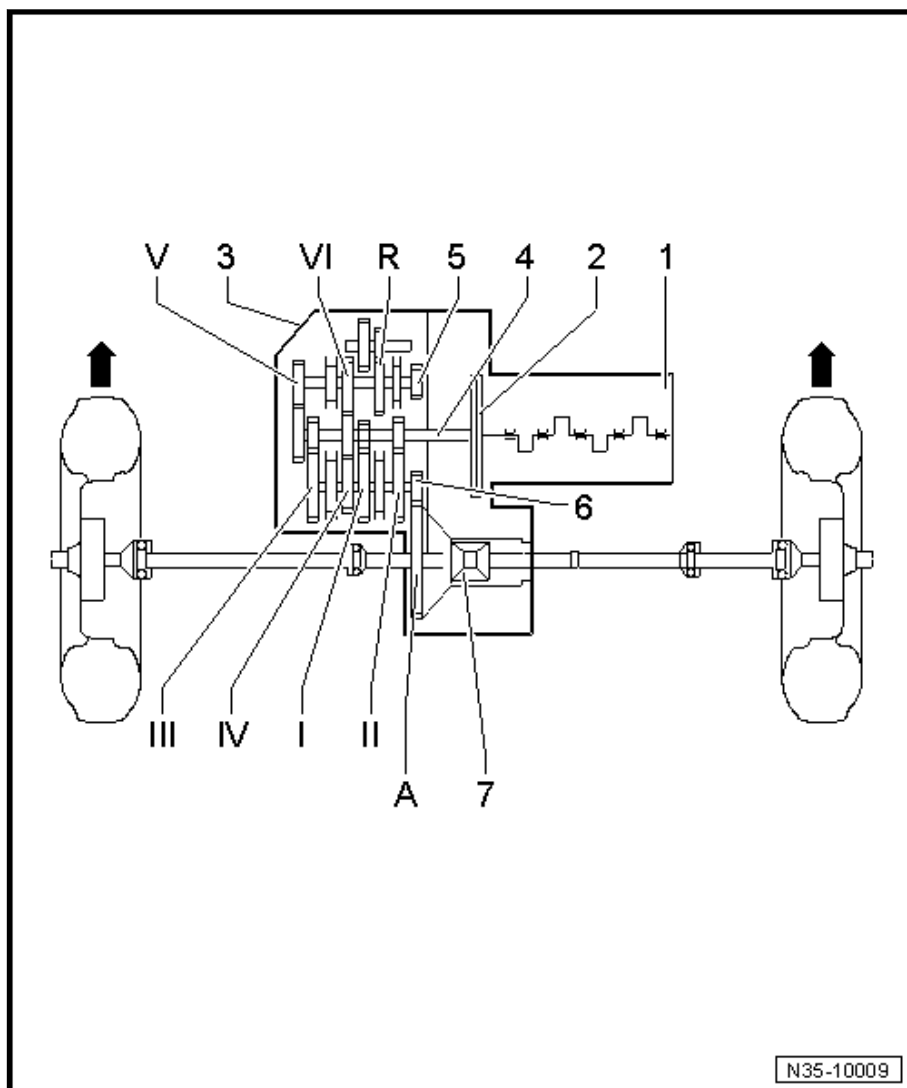


Ratio

-Arrows- point in the direction of travel



- I - 1st Gear
- II - 2nd Gear
- III - 3rd Gear
- IV - 4th Gear
- V - 5th Gear
- VI - 6th Gear
- R - Reverse Gear
- A - Final Drive



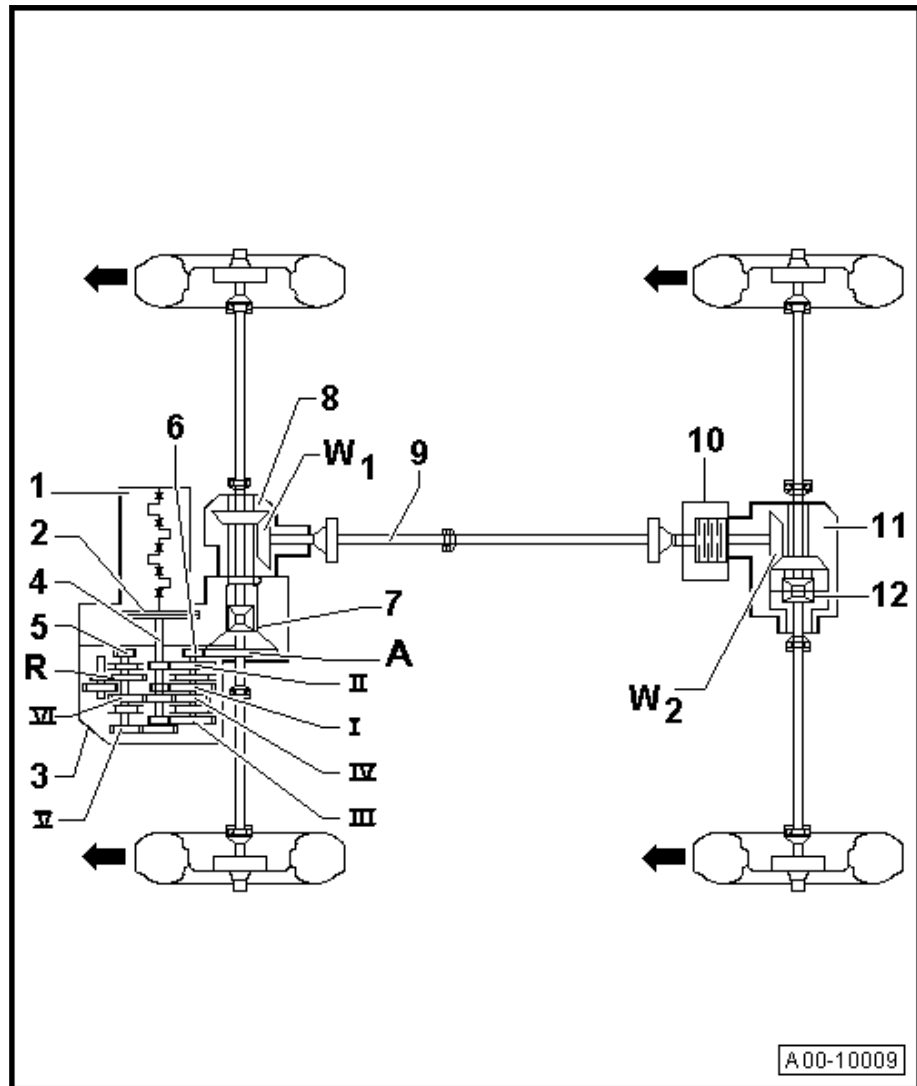


4 Overview - Drivetrain, AWD

Name

The -arrows- point in the direction of travel.

- 1 - Engine
- 2 - Clutch
- 3 - Manual Transmission
- 4 - Input Shaft
- 5 - Output Shaft for 5th, 6th and Reverse Gears (Output Shaft II)
- 6 - Output Shaft for 1st through 4th Gear (Output Shaft I)
- 7 - Differential
- 8 - Bevel Box
- 9 - Driveshaft
- 10 - BorgWarner Clutch
- 11 - Rear Final Drive
- 12 - Differential

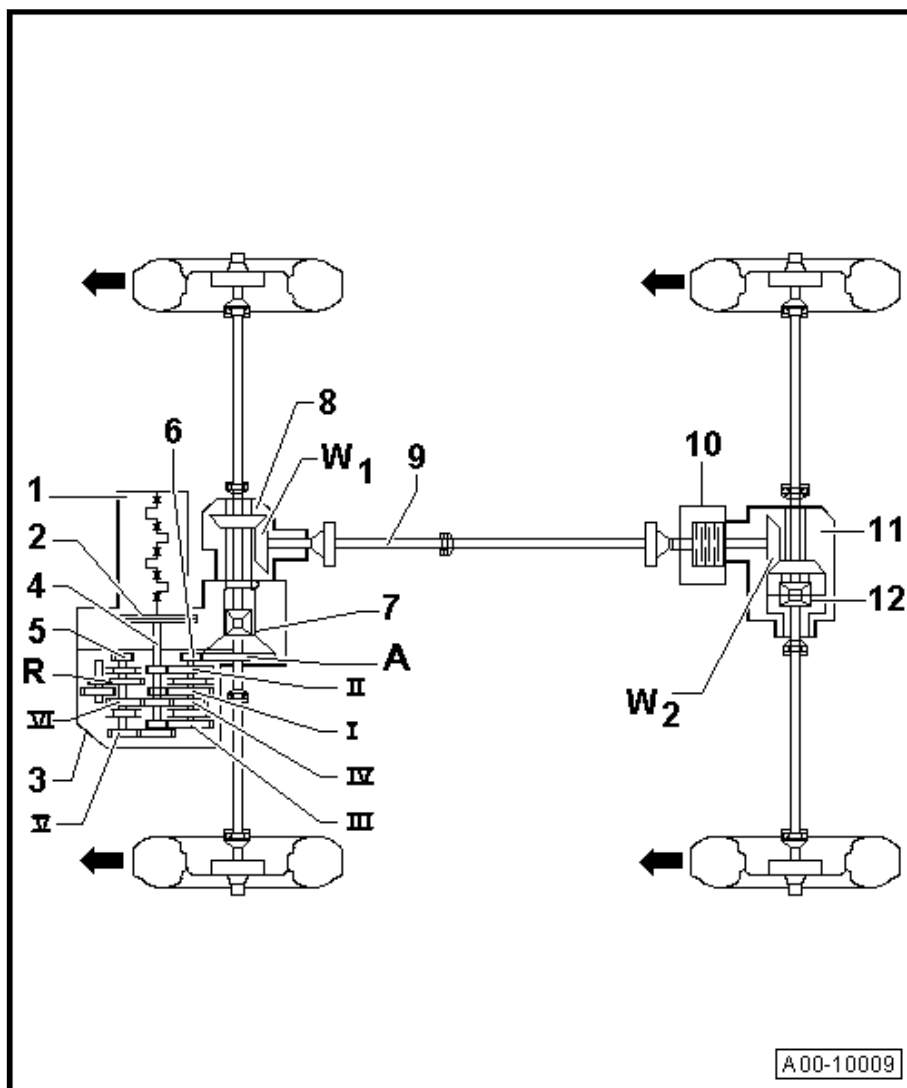


Ratio

The -arrows- point in the direction of travel.



- I - 1st Gear
- II - 2nd Gear
- III - 3rd Gear
- IV - 4th Gear
- V - 5th Gear
- VI - 6th Gear
- R - Reverse Gear
- A - Final Drive
- W1 - Front Bevel Box
- W2 - Rear Bevel Box





5 Transmission Ratio “i”, Calculating

Example:

	6th Gear	Final Drive
Drive gear	$ZG_1 = 43$	$ZA_1 = 25$
Driven gear	$ZG_2 = 35$	$ZA_2 = 69$

$i = ZG_2 : ZG_1$. Refer to ¹⁾.

$i_G = \text{gear ratio} = ZG_2 : ZG_1 = 35 : 43 = 0.814$

$i_A = \text{Axle ratio} = ZG_2 : ZG_1 = 69 : 25 = 2.760$

$i_{\text{total}} = \text{total ratio} = i_G \times i_A = 0.814 \times 2.760 = 2.247$

1) Z_1 = Number of teeth on the drive gear, Z_2 = Number of teeth on the driven gear



6 Notes on Performance Test, AWD

- Only test stands with four braked rollers should be used for the performance test.



7 General Repair Information

The highest level of care and cleanliness along with tools that function properly are required to ensure a proper and successful transmission repair. Of course the general safety precautions also apply when carrying out repair work.

A number of generally applicable instructions for individual repair procedures, which are otherwise mentioned at various points in the Repair Manual, are summarized here under the topic "Components". Refer to ➔ [7.4, page 16](#). They apply to this repair manual.

7.1 Safety Precautions, Vehicles with Start/Stop System



WARNING

Risk of injury if the engine starts automatically in vehicles with a Start/Stop System.

- ◆ *For vehicles with an activated Start/Stop System (recognizable from a notification in the instrument cluster), the engine can be started automatically if needed.*
- ◆ *Make sure the Start/Stop system is deactivated when working on the vehicle (turn off ignition and turn the ignition back on if needed).*

7.2 Contact Corrosion

- ◆ The transmission housing and clutch housing consist of a magnesium alloy.
- ◆ Screws and other components, which come into direct contact with the transmission, have a surface coating adapted for this.
- ◆ Contact corrosion occurs when incorrect components (bolts, nuts, washers, etc.) are used. The transmission housing and clutch housing are damaged.
- ◆ Only install components provided in the ➔ Electronic Parts Catalog (ETKA).

7.3 Special Tools

Refer to ➔ Workshop Equipment and Special Tools for a complete list of special tools used in the repair manual.

7.4 Components

7.4.1 Transmission

- ◆ Make sure that the alignment bushings between the engine and transmission are positioned correctly when installing the manual transmission.
- ◆ Clean the contact surfaces when installing mounting brackets and waxed components. Contact surfaces must be free of wax and grease.
- ◆ Allocate the bolts and other components. Refer to the ➔ Electronic Parts Catalog (ETKA).

FWD

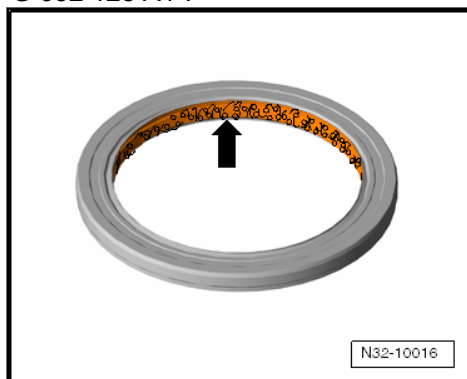
- ◆ Check the transmission fluid level after installation. Refer to [⇒ F8 fluid, Checking", page 252](#) .
- ◆ For capacities, refer to [⇒ T1.2 transmission Allocation and Capacities - FWD", page 2](#) . For specification, refer to the [⇒ Electronic Parts Catalog \(ETKA\)](#).

AWD

- ◆ After installing the transmission and/or bevel box, check the transmission fluid level in the manual transmission and the gear oil level in the bevel box (Manual Transmission. Refer to [⇒ F8 fluid, Checking", page 252](#)), (Bevel Box. Refer to [⇒ O10 oil in Bevel Box, Checking or Filling", page 294](#)).
- ◆ For capacities, refer to [⇒ T2.2 transmission Allocation and Capacities - AWD", page 8](#) . For specification, refer to the [⇒ Electronic Parts Catalog \(ETKA\)](#).

7.4.2 O-Rings, Gaskets, Seals and Sealant

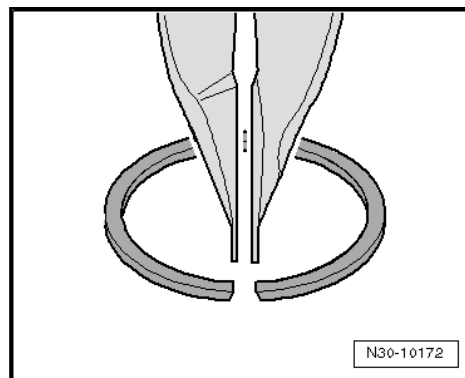
- ◆ Always thoroughly clean the separating surfaces on the housing before applying the sealant.
- ◆ Apply the Sealant -AMV 188 200 03- evenly and not too thick.
- ◆ Replace the O-rings, seals and gaskets.
- ◆ Flange shaft, input shaft and selector shaft seals are illustrated as shaft seals.
- ◆ After removing the shaft seals or gaskets, check the contact surface on the housings or shafts for burrs or damage caused by the removal. Repair as necessary.
- ◆ Before installing the shaft seals, lightly oil the outer circumference and fill the space between the sealing lips -arrow- halfway with Grease -G 052 128 A1-.



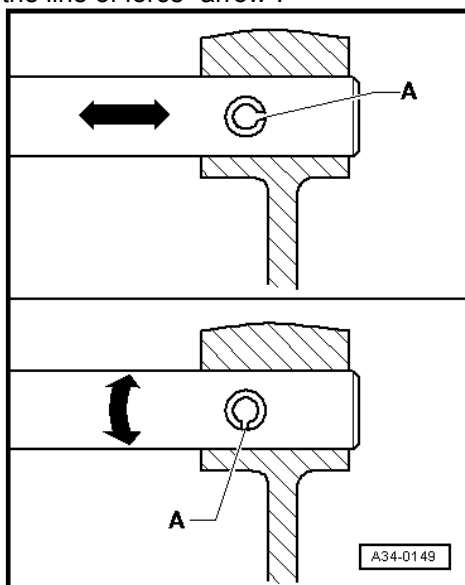
- ◆ The open side on the shaft seals faces the fluid to be sealed off.
- ◆ Press in new shaft seal, so that the sealing lip does not run on the same point as the sealing lip of the old shaft seal (use offset tolerance).
- ◆ Lightly lubricate the O-rings before inserting to prevent the rings from being crushed during assembly.
- ◆ Check the fluid level in the manual transmission after replacing the seals, O-rings and gaskets (Refer to [⇒ F8 fluid, Checking", page 252](#) .) or the fluid level in the bevel box (Refer to [⇒ O10 oil in Bevel Box, Checking or Filling", page 294](#) .)



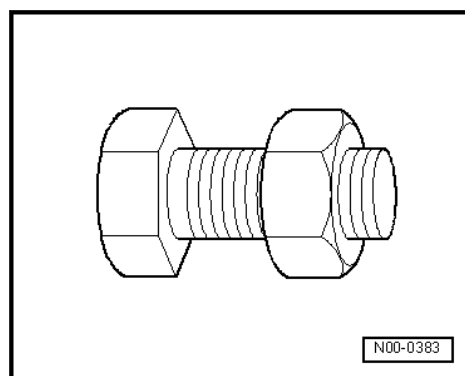
7.4.3 Circlips



- ◆ Do not stretch the circlips.
- ◆ Installation position for some of the circlips: the circlip is »narrower at the top« and so is its installation position. This makes it easier for the pliers to grab the circlip when removing and installing it.
- ◆ Replace damaged or overstretched locking ring after removing.
- ◆ The circlips must rest at the bottom of the groove.
- ◆ Replace the adapter sleeves. Installation position: the slot -A- should align with the line of force -arrow-.



7.4.4 Bolts and Nuts



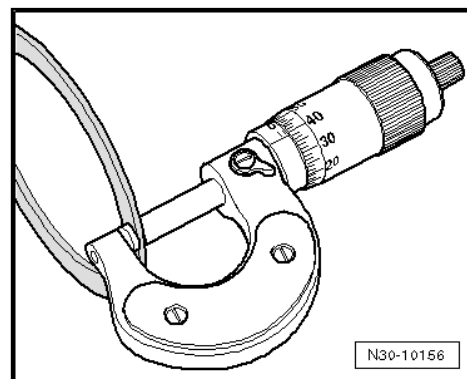


- ◆ Always loosen or tighten bolts and nuts on covers and housings diagonally with a tightening sequence.
- ◆ Especially delicate components, such as clutch pressure plates, must not be distorted. Loosen and tighten bolts and nuts in stages in a diagonal sequence.
- ◆ The tightening specifications given apply to uncoiled bolts and nuts.
- ◆ Always replace self-locking bolts and nuts.
- ◆ Make sure the contact surfaces and visible surfaces on the nuts and bolts are waxed after assembling.
- ◆ Use a wire brush to clean the threads of the bolts that were installed with locking fluid. Then insert the bolts with Locking Fluid -AMV 185 101 A1-.
- ◆ The threaded holes in which the self-locking bolts or bolts coated with locking fluid were installed must be cleaned (for example, with a thread tap). Otherwise the bolts could shear the next time they are removed.
- ◆ Please make sure that the thread pitch is correct so that the proper thread tap is used during cleaning, and the thread does not get damaged.
- ◆ Make sure the contact surfaces and visible surfaces on the nuts and bolts are waxed after assembling.

7.4.5 Bearings

- ◆ Install needle bearings with the lettered side (thicker metal) facing the fitting tool.
- ◆ Insert all the bearings in transmission with transmission fluid.
- ◆ Replace all the tapered roller bearings that are on the same shaft, and use tapered roller bearings from the same manufacturer.
- ◆ Heat the tapered roller bearing inner races to approximately 100 °C with the Inductive Heat Unit -VAS 6414- before installing. Press on to the stop when installing, so there is no axial play.
- ◆ Do not interchange outer and inner bearing races with those from other bearing of the same size. The bearings are paired.

7.4.6 Shims



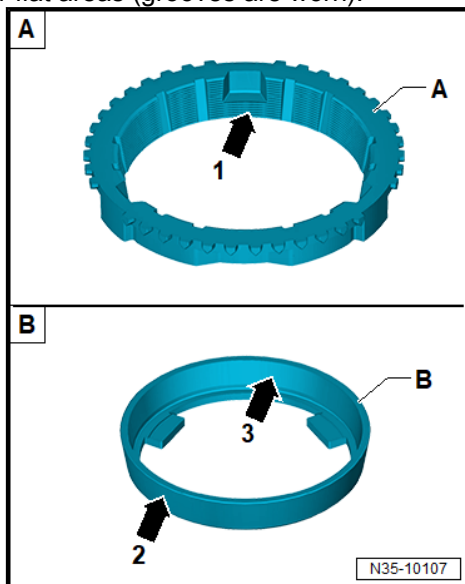
- ◆ Measure the shims at several locations with a micrometer caliper. Tolerance variations make it possible to find the exact shim thickness required.
- ◆ Check for burrs or damage.



- ◆ Only install perfect shims.

7.4.7 Synchronizer Rings

- ◆ Do not interchange them. When reusing synchronizer rings, always install on the same gear assembly.
- ◆ Check for wear and replace if necessary.
- ◆ Check the grooves -arrow 1- on the synchronizer ring -A- and the inner race for flat areas (grooves are worn).



- ◆ The coating on the synchronizer rings must not be damaged.
- ◆ If an intermediate ring -B- is installed, check the outer friction surface -arrow 2- and the inner friction surface -arrow 3- for »grooves« and »scoring«.
- ◆ Check the gear wheel taper for »scoring« and »wear grooves«.
- ◆ Coat the synchronizer rings with transmission fluid and then install.

7.4.8 Gear Wheels, Synchronizer Hubs and Needle Bearing Sleeve

- ◆ Warm the needle bearing sleeves to approximately 100 °C with an Inductive Heater -VAS 6414-.
- ◆ Heat the synchronizer hub to approximately 100 °C with the Inductive Heater -VAS 6414- before installing. Press on as far as the stop when installing so there is no axial play.
- ◆ Heat the gears to approximately 100 °C with the Inductive Heat Unit -VAS 6414- before installing. Press on as far as the stop when installing so there is no axial play.
- ◆ Pay attention to the installation position.

7.4.9 Gear Assemblies

- ◆ After assembling, check the gear assemblies for minimum axial clearance and ease of movement.

7.4.10 Clutch

- ◆ Do not tilt the clutch pressure plate. Loosen and tighten it diagonally and in small steps.



- ◆ To reduce odor caused by a burnt clutch, thoroughly clean the clutch housing and the flywheel running surface with a cloth.



30 – Clutch

1 Drivetrain, Troubleshooting

- Refer to ⇒ Drivetrain; Rep. Gr. 30; Defects on the Clutch and Clutch Mechanism and ⇒ Drivetrain; Rep. Gr. 34; Shift Mechanism Complaints.

2 Clutch Mechanism, Servicing

2.1 Overview

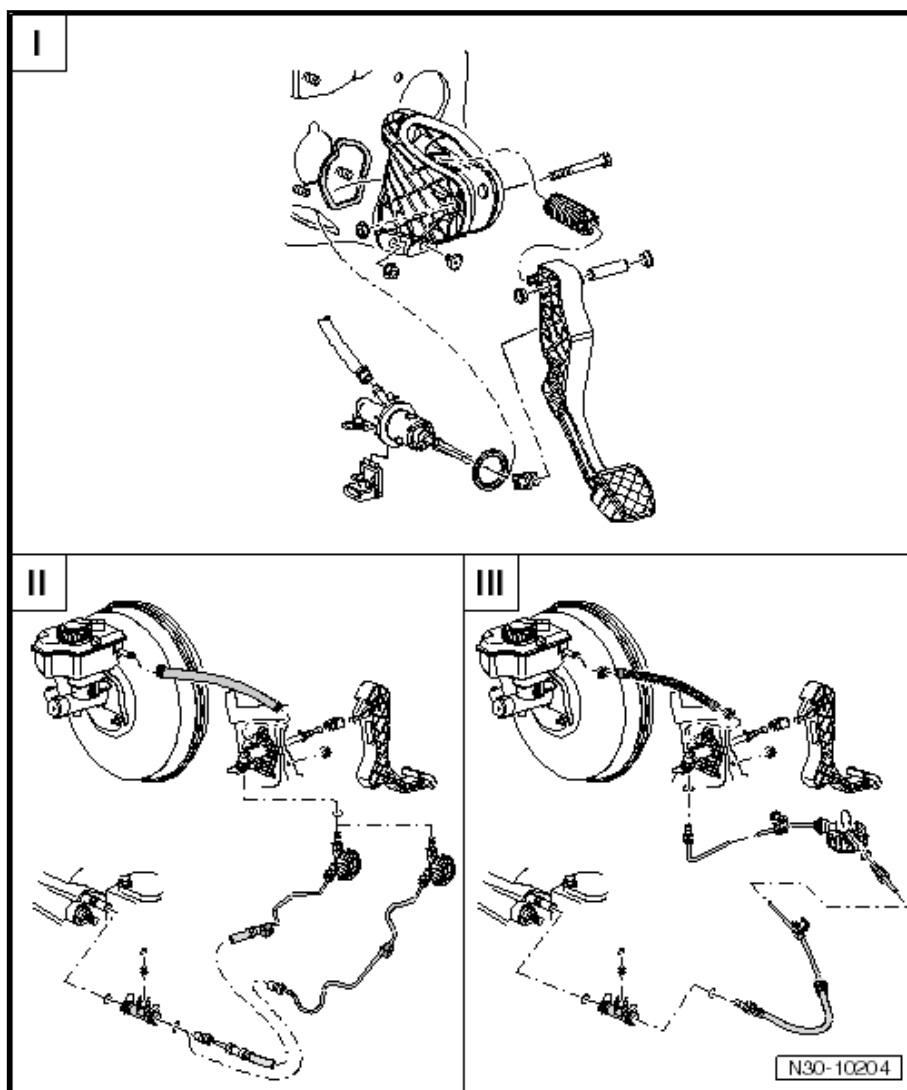


Note

- ◆ Get the anti-theft code for the radio before disconnecting the battery.
- ◆ Disconnect the battery ground cable. Refer to ⇒ *Electrical Equipment; Rep. Gr. 27; Battery; Battery, Disconnecting and Connecting*.
- ◆ Refer to ⇒ *Electrical Equipment; Rep. Gr. 27; Battery; Battery, Disconnecting and Connecting* when re-connecting the battery.
- ◆ Lubricate all bearing areas and contact surfaces.
- ◆ Refer to the ⇒ *Electronic Parts Catalog (ETKA)* for the grease allocation.

I - Overview Pedal Cluster.
Refer to ⇒ [-2.2 Pedal Cluster](#), page 23.

II - Overview - Hydraulics,
LHD. Refer to ⇒ [-2.8 Hydraulics, LHD](#), page 52.



2.2 Overview - Pedal Cluster



1 - Bulkhead

- ☐ With a mount for the mounting bracket

2 - Seal

- ☐ Replace after removing
- ☐ Between the mounting bracket and bulkhead
- ☐ Self-adhesive
- ☐ Attached to the mounting bracket

3 - Mounting Bracket

- ☐ For the clutch pedal mount
- ☐ Some versions have a damper. Refer to ➤ [Fig. "Mounting bracket with damper -arrow-"](#), page 25.
- ☐ Removing and Installing. Refer to ➤ [B2.5 racket, Removing and Installing](#)", page 38.

4 - Bolt

5 - Over-Center Spring

- ☐ Removing and Installing. Refer to ➤ [S2.3 pring, Removing and Installing](#)", page 25.

6 - Bearing Bushing

7 - Mounting Pin

8 - Clutch Pedal

- ☐ Removing and Installing. Refer to ➤ [P2.4 edal, Removing and Installing](#)", page 32.

9 - Mount

- ☐ To remove and install, disconnect the clutch master cylinder from the clutch pedal. Refer to ➤ [P2.4 edal, Removing and Installing](#)", page 32.

10 - Seal

- ☐ Replace after removing
- ☐ Between the clutch master cylinder and the mounting bracket

11 - Clutch Master Cylinder

- ☐ Removing and installing after removing the mounting bracket. Refer to ➤ [M2.6 aster Cylinder, Removing and Installing](#)", page 46

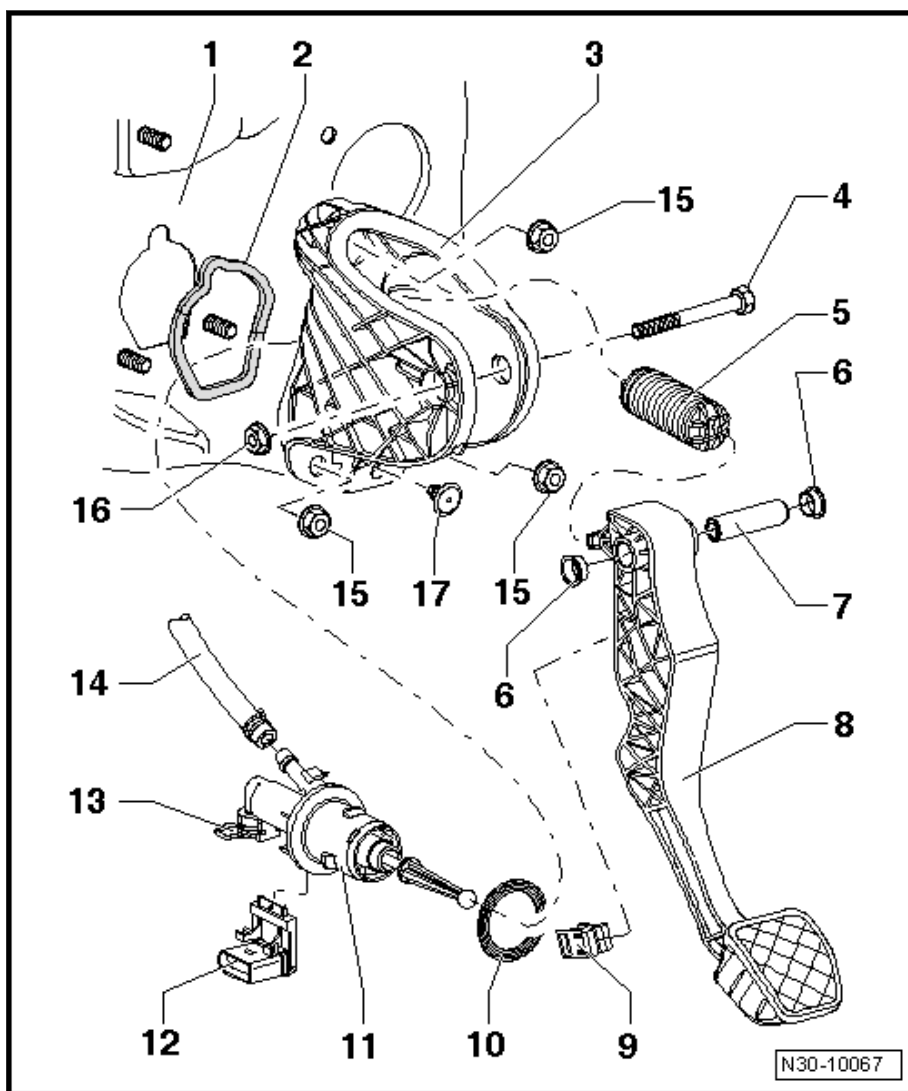
12 - Clutch Position Sensor -G476-

- ☐ Removing and Installing. Refer to ➤ [C2.7 lutch Position SensorG476, Removing and Installing](#)", page 48.
- ☐ Can be checked in "Guided Fault Finding" using the Vehicle Diagnostic Tester ➤ Vehicle diagnostic tester.
- ☐ The Clutch Position Sensor -G476- is called the Clutch Pedal Switch - F36- in "Guided Fault Finding".

13 - Clip

- ☐ To remove and install the hose/line assembly or pipe, pull the clamp all the way out.

14 - Hose





- ☐ Made of rubber
- ☐ Made of plastic from 12/2005. Refer to ➔ [Fig. "Plastic hose -1- ", page 55](#) .

15 - Hex Nut, 25 Nm

- ☐ Self-locking
- ☐ Quantity: 3
- ☐ For the mounting bracket to the bulkhead
- ☐ Replace after removing

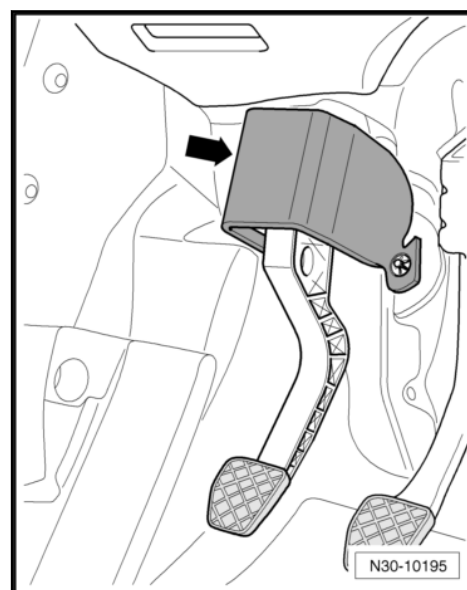
16 - Hex Nut, 25 Nm

- ☐ Replace after removing

17 - Stop

- ☐ For the clutch pedal

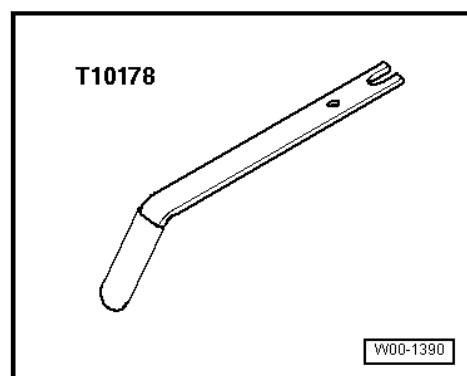
Mounting bracket with damper -arrow-



2.3 Over-Center Spring, Removing and Installing

Special tools and workshop equipment required

- ◆ Over-Center Spring Assembly Tool -T10178-





2.3.1 Removing

Vehicles with Knee Airbag



Note

The knee airbag is installed above the pedal assembly.

- First check whether a coded radio is installed. If this is the case obtain the anti-theft code.
- Disconnect the battery ground cable. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Disconnecting and Connecting.

Continuation for All

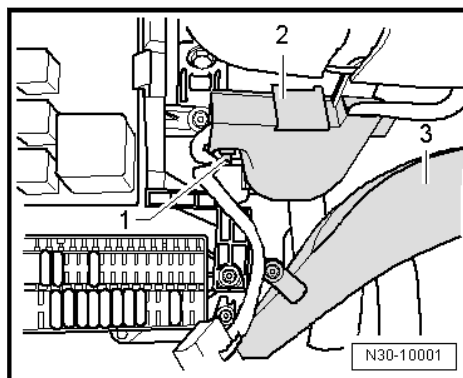
- Move the driver seat all the way back and raise the steering wheel to the highest position.
- Remove the trim and the cover under the trim on the driver side. Refer to ⇒ Body Interior; Rep. Gr. 68; Storage Compartments, Covers and Trim.

Vehicles with Knee Airbag

- Remove the knee airbag bracket and the impact bolster. Refer to ⇒ Body Interior ; Rep. Gr. 69; Airbag; Bracket, Knee Airbag, Removing and Installing.

Continuation for All

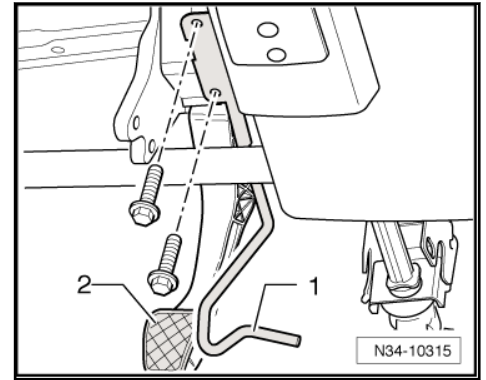
- Remove the wiring guide -2- from the steering column.



- Remove the footwell vents -3-. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 80; Heater, Servicing.

Vehicles without Knee Airbag

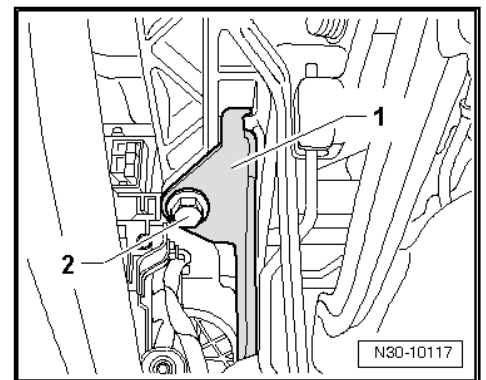
There are different ways of securing the crash bolster -1- in front of the clutch pedal -2-.



Securing with Two Bolts

- Remove the crash bolster -1- (two bolts).

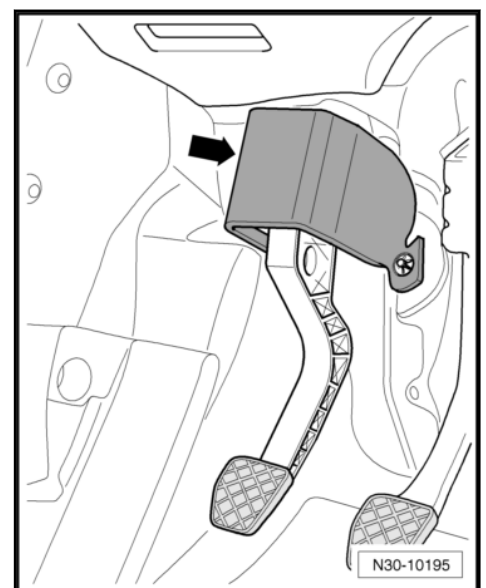
Securing with One Bolt



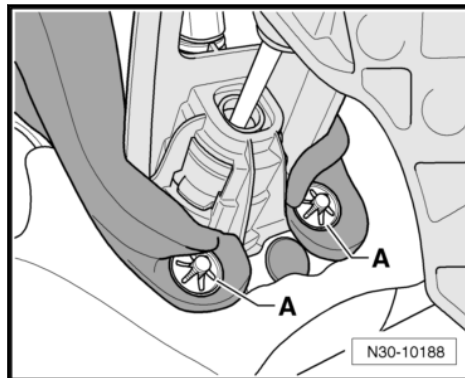
- Remove the crash bolster -1- (one bolt -2-).

Continuation for All

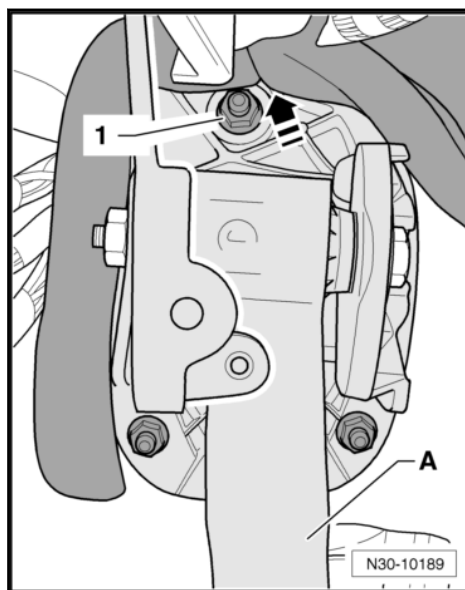
- Remove the damper -arrow- at the bottom of the mounting bracket/clutch pedal, if equipped.



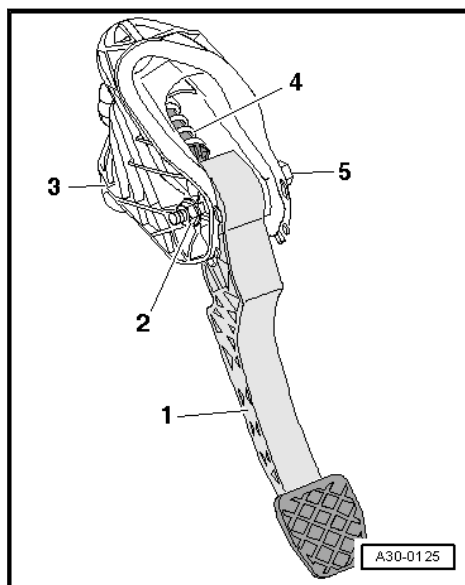
- Remove the washers -A- for the damper.



- Remove the damper.
- Push the damper near the upper nut -1- above the clutch pedal -A- upward in the -direction of the arrow-.



- Remove the nut -2- and the bolt -5- and then remove the clutch pedal -1- from the mounting bracket -3-.





Note

The clutch pedal remains engaged in the clutch master cylinder actuator rod.

- Move the clutch pedal downward and remove the over-center spring -4- from the mounting bracket.

2.3.2 Installing

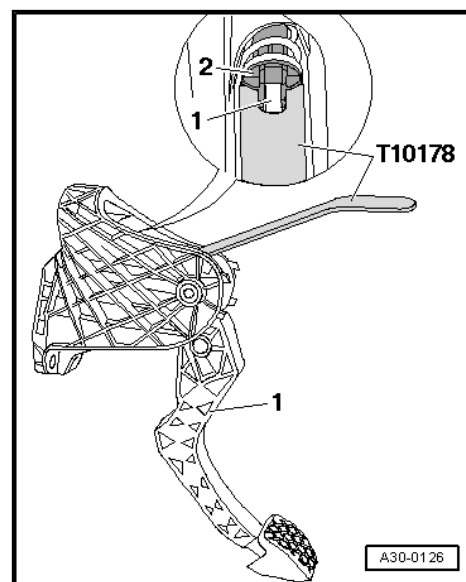
Install in reverse order of removal while noting the following:



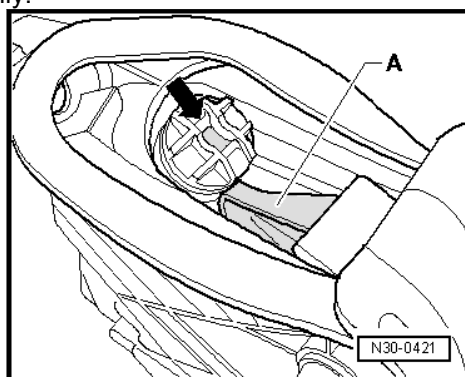
Note

Replace the self-locking nuts.

- Install the over-center spring -2- into the mounting bracket from the top and hold the end of the spring in its installation position using the Over-Center Spring Assembly Tool -T10178-.



- The mounting area -arrow- for the clutch pedal pin -A- must be positioned vertically.

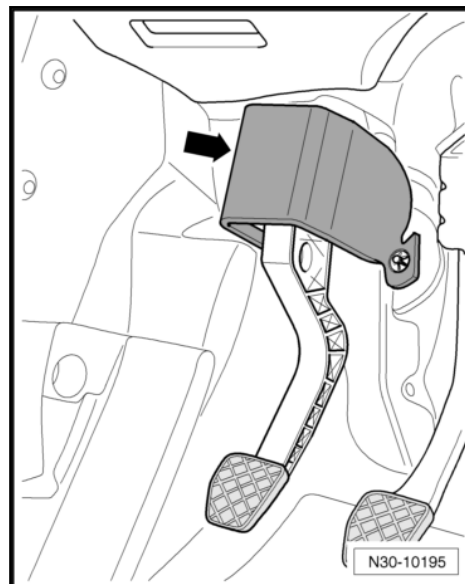


- Insert the clutch pedal pivot pin -A- into the mounting cup of the over-center spring.



- Press the clutch pedal slightly, push the bolt through and tighten the self-locking nut, tightening specification. Refer to [⇒ S2.3.3 specifications", page 31](#).

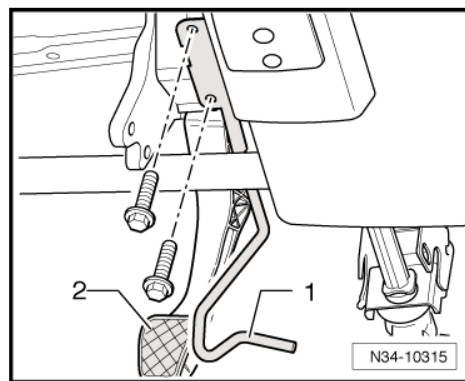
Some vehicles have a damper -arrow- on the mounting bracket/clutch pedal.



- Bring the damper back into the installation position.

Vehicles without Knee Airbag

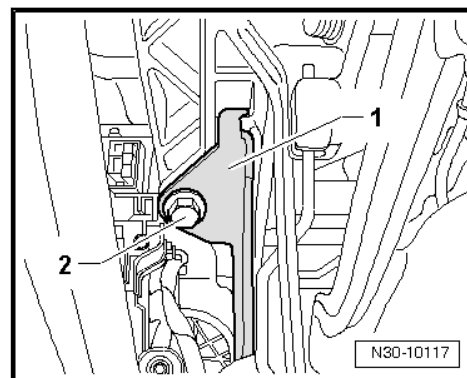
There are different ways of securing the crash bolster -1- in front of the clutch pedal -2-.



Securing with Two Bolts

- Install the crash bolster -1- and tighten the two bolts to the tightening specification. Refer to [⇒ S2.3.3 specifications", page 31](#).

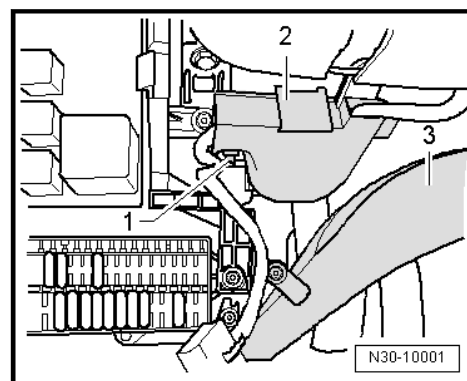
Securing with One Bolt



- Install the crash bolster -1- and tighten the bolt -2- to the tightening specification. Refer to ➤ [S2.3.3 specifications](#), page 31.

Continuation for All

- Attach the wiring guide -2- to the steering column.



- Install the footwell vents -3-. Refer to ➤ Heating, Ventilation and Air Conditioning; Rep. Gr. 80; Heater, Servicing.

Vehicles with Knee Airbag

- Install the knee airbag bracket and the impact bolster. Refer to ➤ Body Interior; Rep. Gr. 69; Airbag; Bracket, Knee Airbag, Removing and Installing.

Continuation for All

- Install the trim and the cover under the trim on the driver side. Refer to ➤ Body Interior; Rep. Gr. 68; Storage Compartments, Covers and Trim.
- If disconnected, connect the battery. Refer to ➤ Electrical Equipment; Rep. Gr. 27; Battery; Battery Disconnecting and Connecting.

2.3.3 Tightening Specifications

Component	Nm
Clutch pedal to mounting bracket ◆ Replace the self-locking nuts	25
Crash bolster to mounting bracket/steering column (secured with two bolts)	10
Crash bolster to mounting bracket/steering column (secured with one bolt)	20

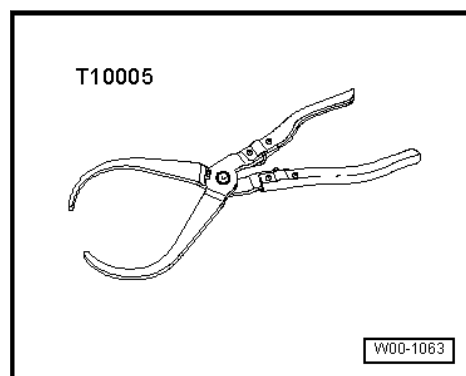


Component	Nm
♦ Replace the crash bolster bolts	

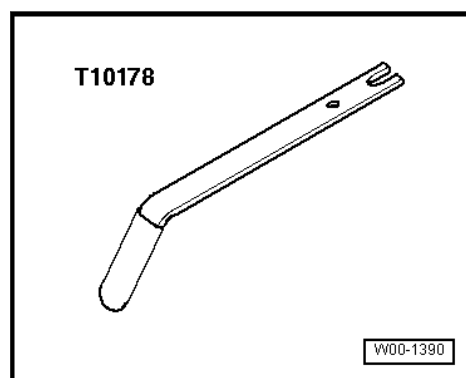
2.4 Clutch Pedal, Removing and Installing

Special tools and workshop equipment required

- ♦ Clutch Pedal Pliers -T10005-



- ♦ Over-Center Spring Assembly Tool -T10178-



2.4.1 Removing

Vehicles with Knee Airbag



Note

The knee airbag is installed above the pedal assembly.

- First check whether a coded radio is installed. If this is the case obtain the anti-theft code.
- Disconnect the battery ground cable. Refer to ➤ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Disconnecting and Connecting.

Continuation for All

- Move the driver seat all the way back and raise the steering wheel to the highest position.
- Remove the trim and the cover under the trim on the driver side. Refer to ➤ Body Interior; Rep. Gr. 68; Storage Compartments, Covers and Trim.

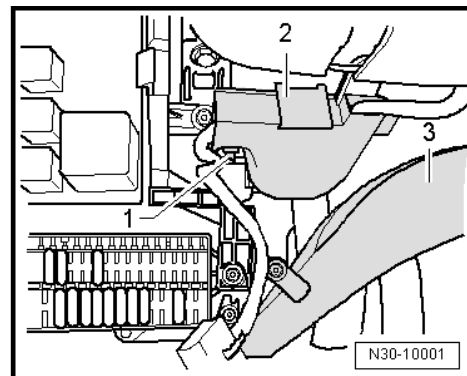
Vehicles with Knee Airbag

- Remove the knee airbag bracket and the impact bolster. Refer to ➤ Body Interior ; Rep. Gr. 69; Airbag; Bracket, Knee Airbag, Removing and Installing.



Continuation for All

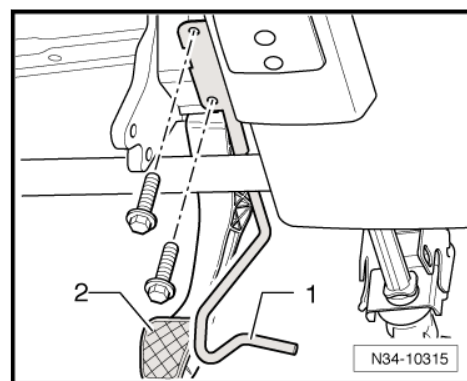
- Remove the wiring guide -2- from the steering column.



- Remove the footwell vents -3-. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 80; Heater, Servicing.

Vehicles without Knee Airbag

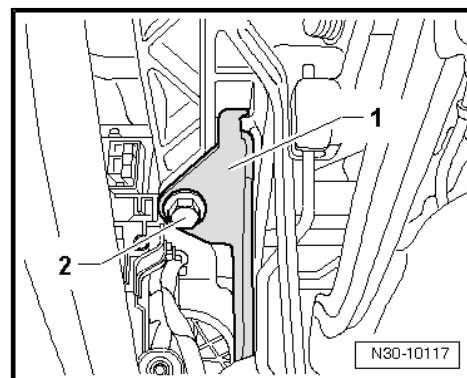
There are different ways of securing the crash bolster -1- in front of the clutch pedal -2-.



Securing with Two Bolts

- Remove the crash bolster -1- (two bolts).

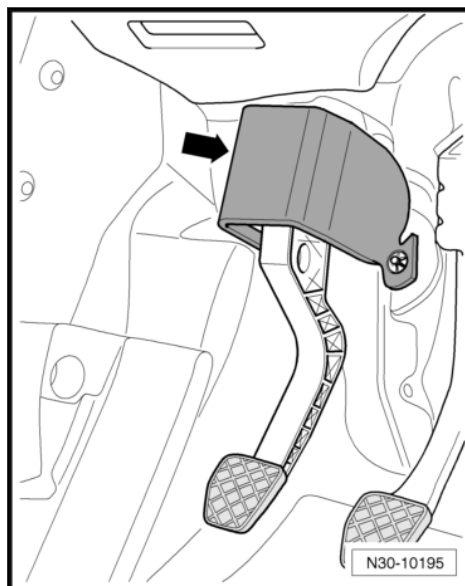
Securing with One Bolt



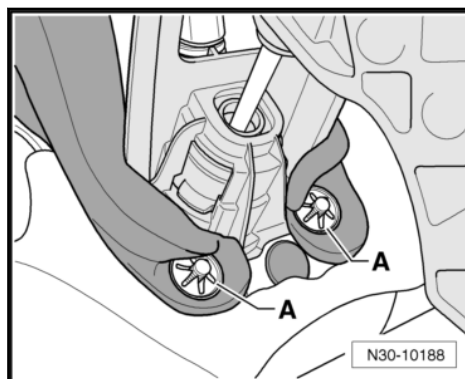
- Remove the crash bolster -1- (one bolt -2-).

Continuation for All

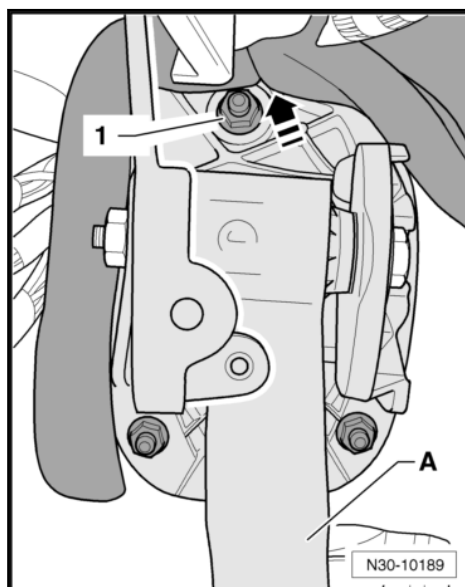
- Remove the damper -arrow- at the bottom of the mounting bracket/clutch pedal, if equipped.



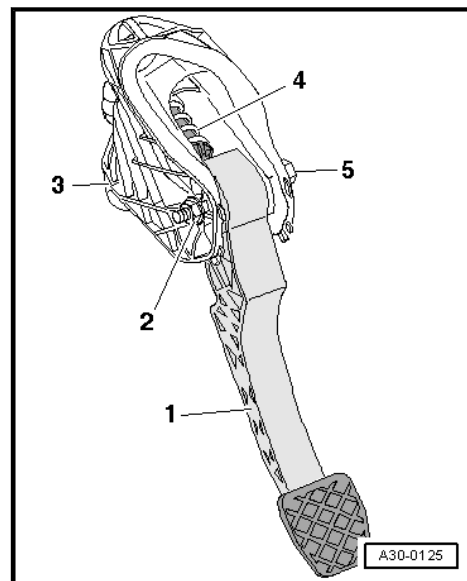
- Remove the washers -A- for the damper.



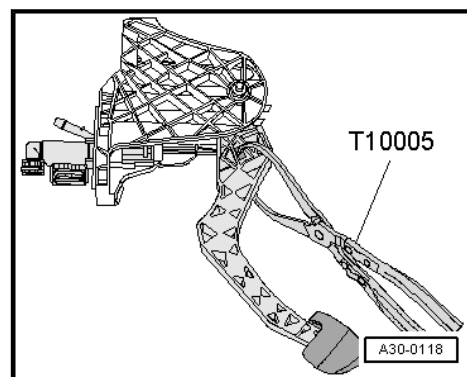
- Remove the damper.
- Push the damper near the upper nut -1- above the clutch pedal -A- upward in the -direction of the arrow-.



- Remove the nut -2- and the bolt -5- and then remove the clutch pedal -1- from the mounting bracket -3-.



- Move the clutch pedal forward and remove the over-center spring -4- from the mounting bracket.
- Release clutch pedal from clutch master cylinder with Clutch Pedal Pliers -T10005-.



- Remove the clutch pedal.

2.4.2 Installing

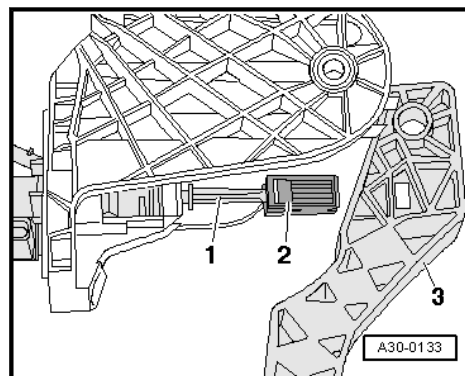
Install in reverse order of removal while noting the following:



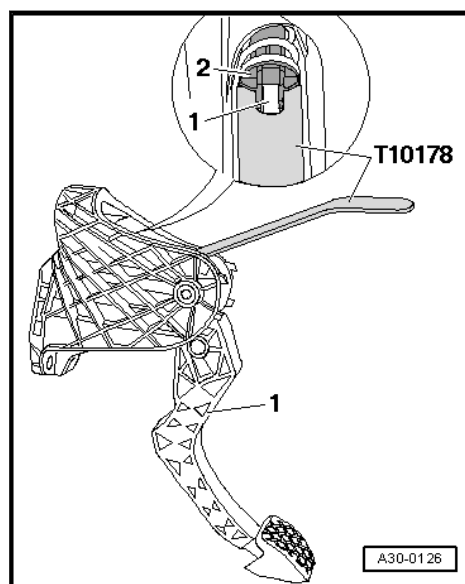
Note

Replace the self-locking nuts.

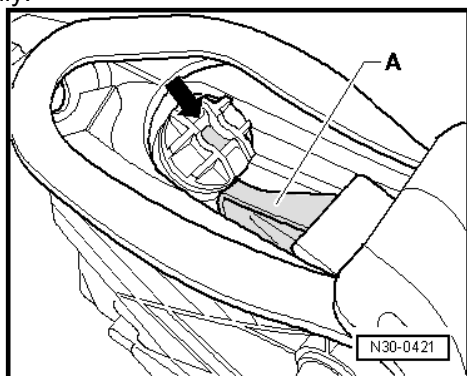
- Install the mount -2- on the clutch master cylinder actuator rod -1-.



- Push the mount into the opening on the clutch pedal -3- until it engages audibly.
- Install the over-center spring -2- into the mounting bracket from the top and hold the end of the spring in its installed position using the Over-Center Spring Assembly Tool -T10178-.



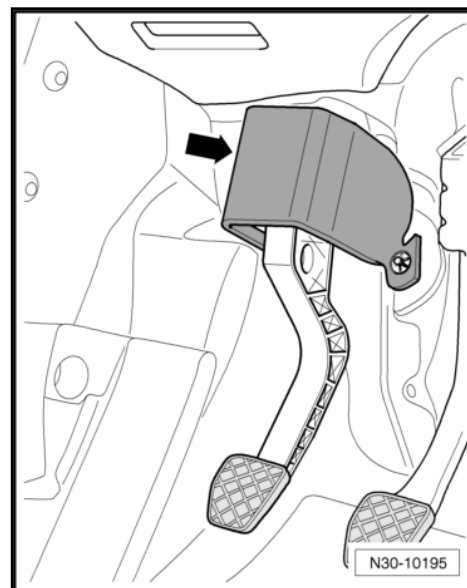
- The mounting area -arrow- for the clutch pedal pin -A- must be positioned vertically.



- Insert the clutch pedal pivot pin -A- into the mounting cup of the over-center spring.
- Press the clutch pedal slightly, push the bolt through and tighten the self-locking nut to the tightening specification. Refer to ➤ [S2.4.3 specifications](#), page 38 .



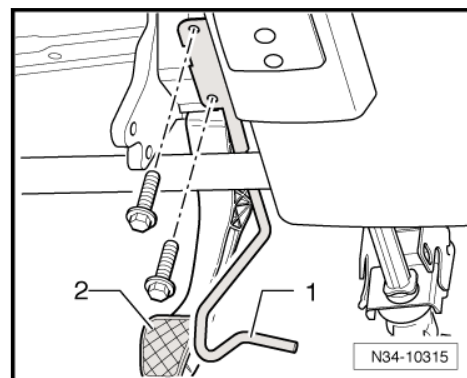
Some vehicles have a damper -arrow- on the mounting bracket/clutch pedal.



- Bring the damper back into the installation position.

Vehicles without Knee Airbag

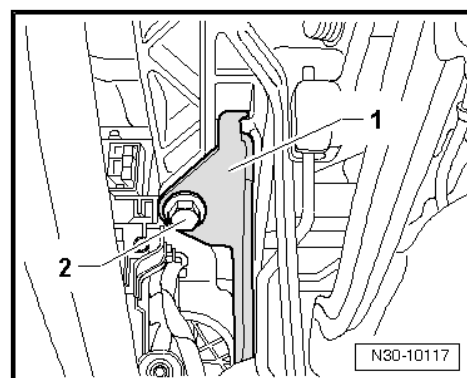
There are different ways of securing the crash bolster -1- in front of the clutch pedal -2-.



Securing with Two Bolts

- Install the crash bolster -1- and tighten the two bolts to the tightening specification. Refer to ➔ [S2.4.3 specifications](#), [page 38](#).

Securing with One Bolt

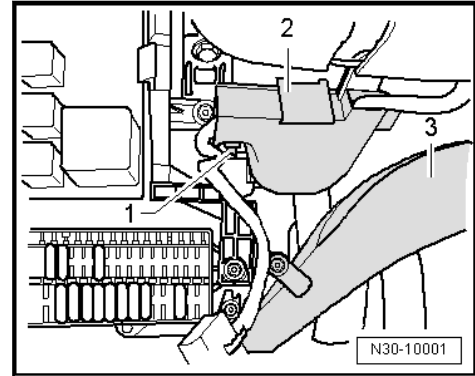




- Install the crash bolster -1- and tighten the bolt -2- to the tightening specification. Refer to ⇒ [S2.4.3 specifications](#), [page 38](#).

Continuation for All

- Attach the wiring guide -2- to the steering column.



- Install the footwell vents -3-. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 80; Heater, Servicing.

Vehicles with Knee Airbag

- Install the knee airbag bracket and the impact bolster. Refer to ⇒ Body Interior ; Rep. Gr. 69; Airbag; Bracket, Knee Airbag, Removing and Installing.

Continuation for All

- Install the trim and the cover under the trim on the driver side. Refer to ⇒ Body Interior; Rep. Gr. 68; Storage Compartments, Covers and Trim.
- Connect the battery and follow the steps for after connecting the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Disconnecting and Connecting.

2.4.3 Tightening Specifications

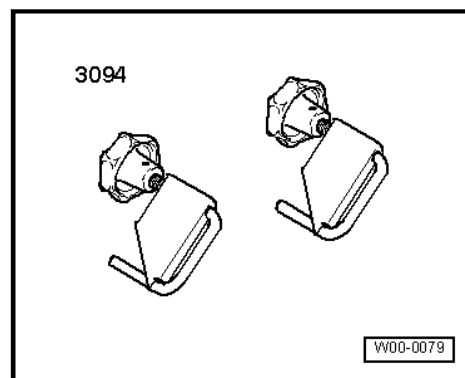
Component	Nm
Clutch pedal to mounting bracket ♦ Replace the self-locking nuts	25
Crash bolster to mounting bracket/steering column (secured with two bolts)	10
Crash bolster to mounting bracket/steering column (secured with one bolt)	20
♦ Replace the crash bolster bolts	

2.5 Mounting Bracket, Removing and Installing

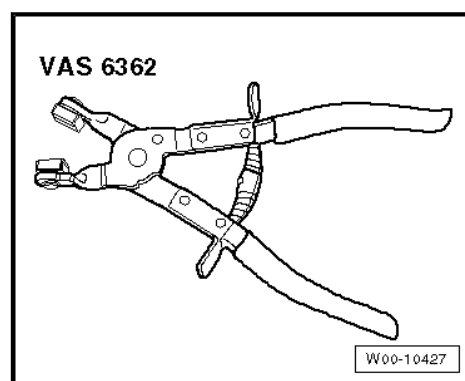
Special tools and workshop equipment required



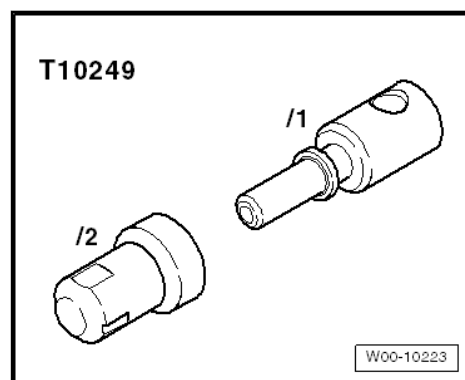
◆ Hose Clamps - Up To 25mm -3094-



◆ Hose Clip Pliers -VAS 6362-



◆ Sealing Tool -T10249-



2.5.1 Removing

LHD

- First check whether a coded radio is installed. If this is the case obtain the anti-theft code.
- Disconnect the battery ground cable. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Disconnecting and Connecting.
- Remove entire air filter housing if it is located near the battery. Refer to ⇒ Rep. Gr. 23; Diesel Direct Injection System; Overview - Air Filter or ⇒ Rep. Gr. 24; Fuel Injection; Air Filter, Removing and Installing.
- Remove the battery and battery tray. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Removing and Installing.

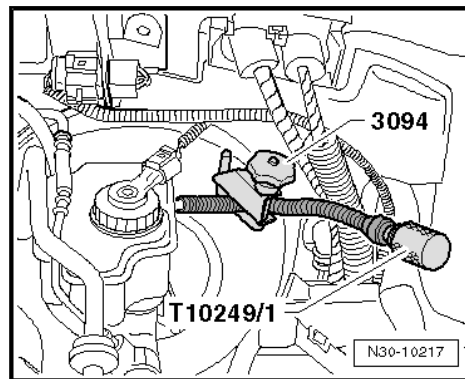


Continuation for All

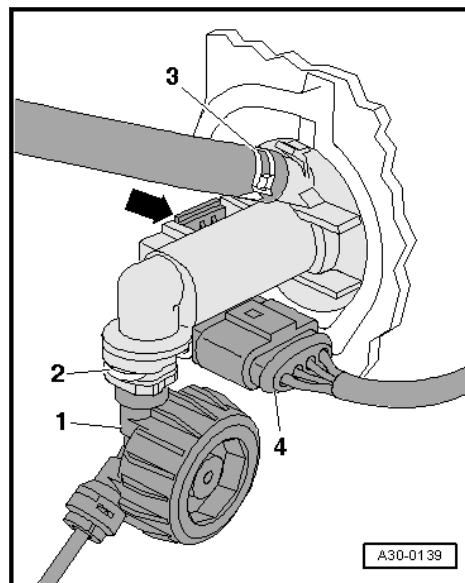


Note

- ◆ *While performing the following work, make sure no brake fluid comes into contact with the longitudinal member or the transmission. If it does, clean the area thoroughly.*
- ◆ *Place a lint-free cloth under the clutch master cylinder.*
- Clamp off the hose to the clutch master cylinder using Hose Clamps - Up To 25mm -3094-.



- Loosen the spring clamp -3- using the Hose Clip Pliers -VAS 6362- and remove the hose from the clutch master cylinder.



- The hose can also be sealed off using the Sealing Tool -T10249/1- (see image above).
- Open the clip -2- with a screwdriver or pointed tool and remove the hose/line assembly and the pipe -1- on the clutch master cylinder.
- Unclip the Clutch Position Sensor -G476- from the clutch master cylinder -arrow- and remove it with the connector -4- still connected.



Note

When working in the floor area, cover the carpet with a cloth to protect against any leaking brake fluid.

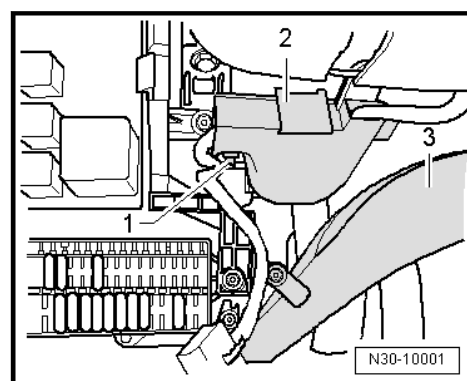
- Remove the trim and the cover under the trim on the driver side. Refer to ➤ Body Interior; Rep. Gr. 68; Storage Compartments, Covers and Trim.

Vehicles with Knee Airbag

- Remove the knee airbag bracket and the impact bolster. Refer to ➤ Body Interior ; Rep. Gr. 69; Airbag; Bracket, Knee Airbag, Removing and Installing.

Continuation for All

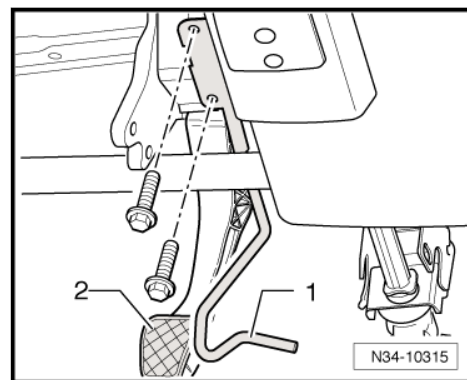
- Remove the wiring guide -2- from the steering column.



- Remove the footwell vents -3-. Refer to ➤ Heating, Ventilation and Air Conditioning; Rep. Gr. 80; Heater, Servicing.

Vehicles without Knee Airbag

There are different ways of securing the crash bolster -1- in front of the clutch pedal -2-.

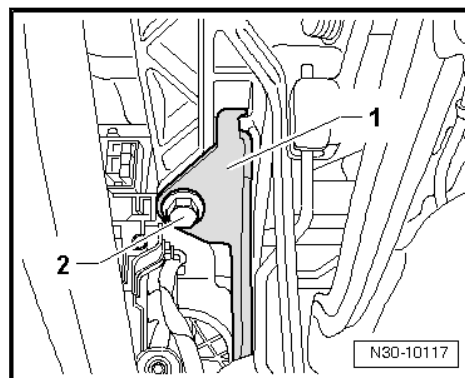


Securing with Two Bolts

- Remove the crash bolster (two bolts).



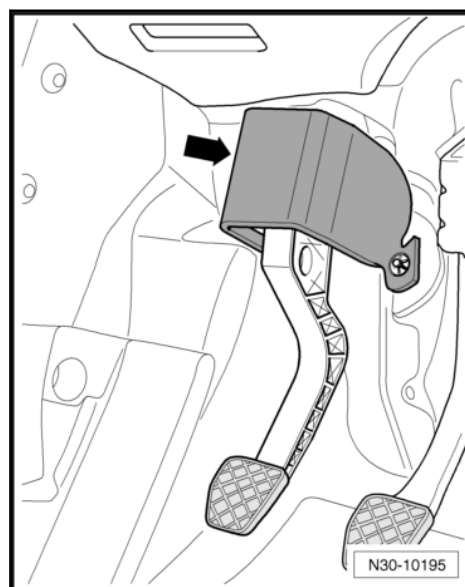
Securing with One Bolt



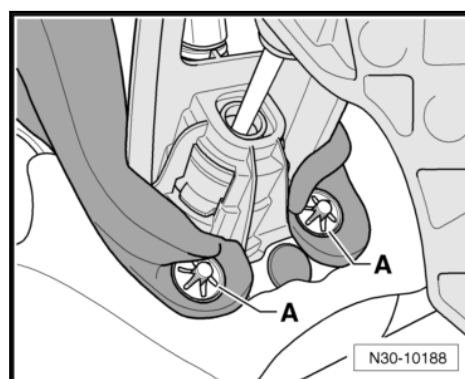
- Remove the crash bolster -1- (one bolt -2-).

Continuation for All

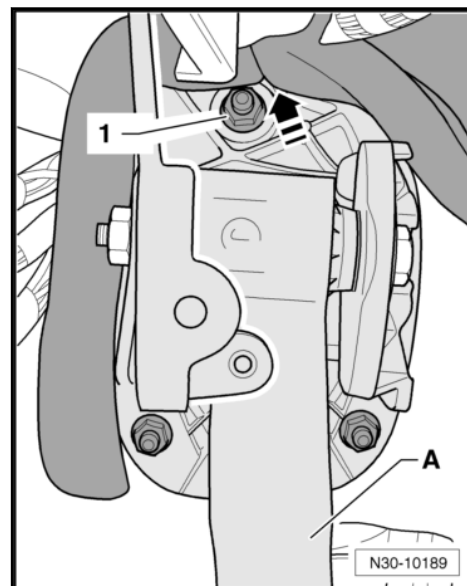
- Remove the damper -arrow- at the bottom of the mounting bracket/clutch pedal, if equipped.



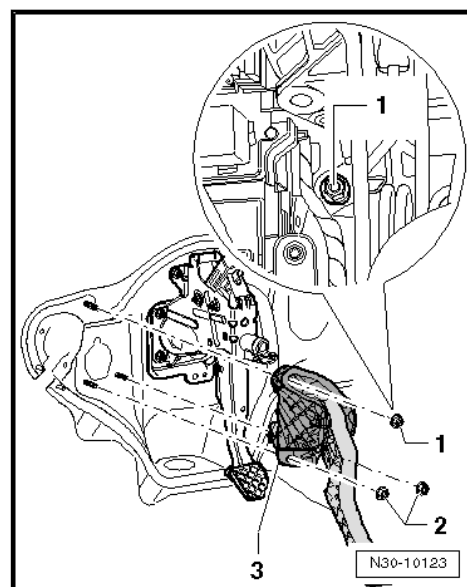
- Remove the washers -A- for the damper.



- Remove the damper.
- Push the damper near the upper nut -1- above the clutch pedal -A- upward in the -direction of the arrow-.



- Remove the nuts -1- and -2-.



The upper nut -1- is accessible between the relay panel and the steering column trim panel.

- Remove the mounting bracket -3-.

2.5.2 Installing

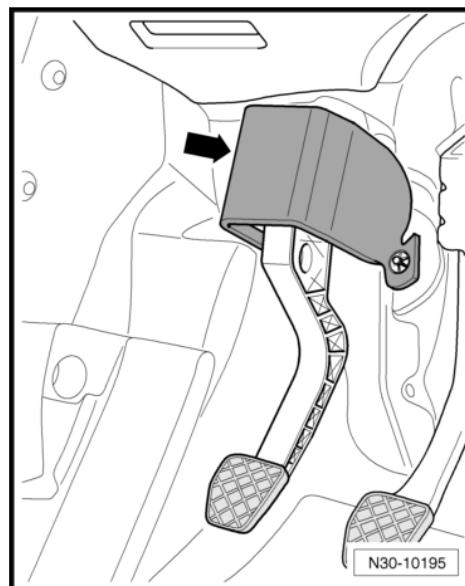
Install in reverse order of removal while noting the following:



Note

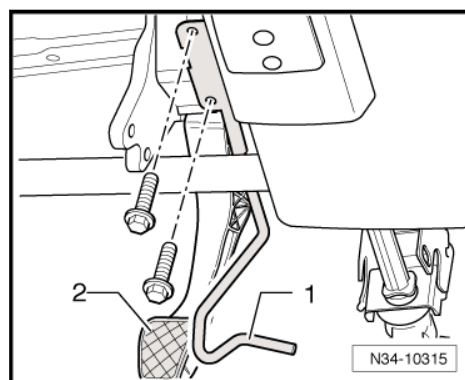
- ◆ *Replace the self-locking nuts.*
- ◆ *Replace the hose clamps.*
- ◆ *Allocate all components according to the ⇒ Electronic Parts Catalog (ETKA).*

Some vehicles have a damper -arrow- on the mounting bracket/clutch pedal.



Vehicles without Knee Airbag

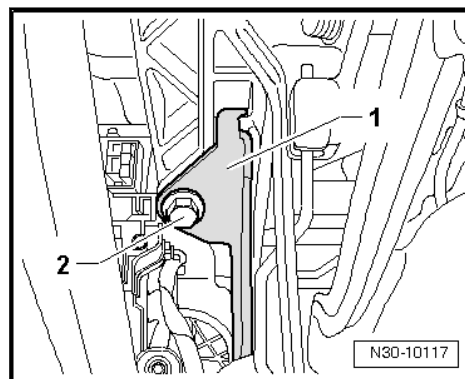
There are different ways of securing the crash bolster -1- in front of the clutch pedal -2-.



Securing with Two Bolts

- Install the crash bolster -1- and tighten the two bolts to the tightening specification. Refer to [⇒ S2.5.3 pecifications", page 46](#) .

Securing with One Bolt

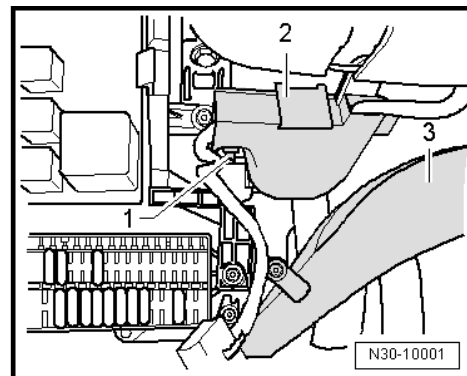


- Install the crash bolster -1- and tighten the bolt -2- to the tightening specification. Refer to [⇒ S2.5.3 pecifications", page 46](#) .



Continuation for All

- Attach the wiring guide -2- to the steering column.



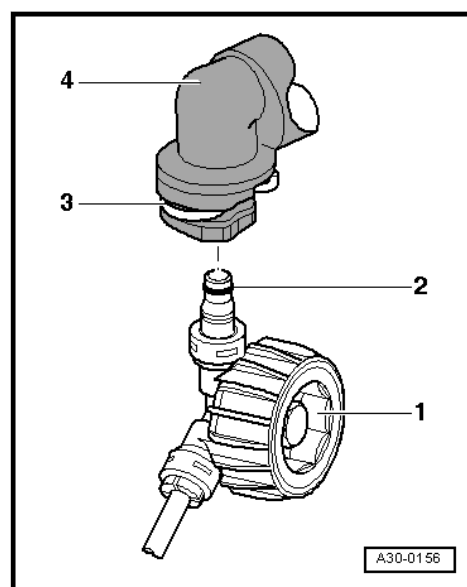
- Install the footwell vents -3-. Refer to ⇒ Heating, Ventilation and Air Conditioning; Rep. Gr. 80; Heater, Servicing; Left Footwell Vent, Removing and Installing.

Vehicles with Knee Airbag

- Install the knee airbag bracket and the impact bolster. Refer to ⇒ Body Interior ; Rep. Gr. 69; Airbag; Bracket, Knee Airbag, Removing and Installing.

Continuation for All

- Install the trim and the cover under the trim on the driver side. Refer to ⇒ Body Interior; Rep. Gr. 68; Storage Compartments, Covers and Trim.
- Install the hose/line assembly and pipe line -1- with the seal -2- on the clutch master cylinder connection -4- until the clip -3- audibly engages.



- Pull on the line to make sure it is secure.
- After removing the Hose Clamps - Up To 25mm -3094-, bring the return hose back to its original shape.
- Bleed the clutch mechanism. Refer to ⇒ [M2.9 echanism, Bleeding", page 55](#) .



LHD

- Install the battery tray and the battery. Refer to ⇒ Electrical System; Rep. Gr. 27; Battery; Battery, Removing and Installing.
- Install entire air filter housing if it is located near the battery. Refer to ⇒ Rep. Gr. 23; Diesel Direct Injection System; Overview - Air Filter or ⇒ Rep. Gr. 24; Fuel Injection; Air Filter, Removing and Installing.
- Connect the battery and follow the steps for after connecting the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Disconnecting and Connecting.

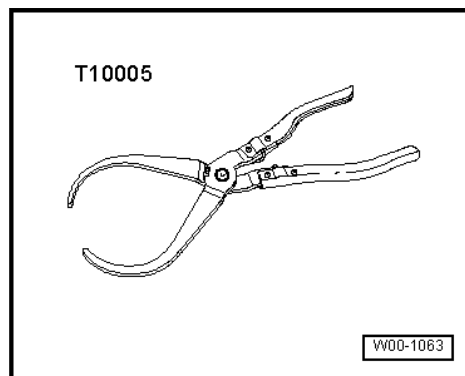
2.5.3 Tightening Specifications

Component	Nm
Mounting bracket to bulkhead ♦ Replace the self-locking nuts.	25
Crash bolster to mounting bracket/steering column (secured with two bolts)	10
Crash bolster to mounting bracket/steering column (secured with one bolt)	20
♦ Replace the crash bolster bolts	

2.6 Clutch Master Cylinder, Removing and Installing

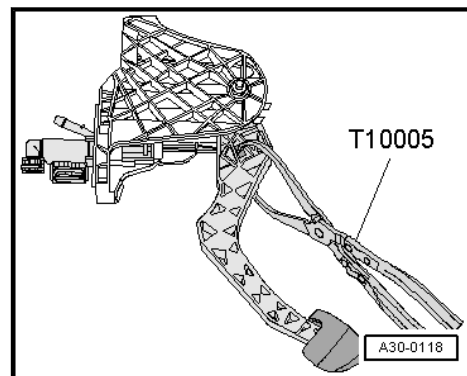
Special tools and workshop equipment required

- ♦ Clutch Pedal Pliers -T10005-

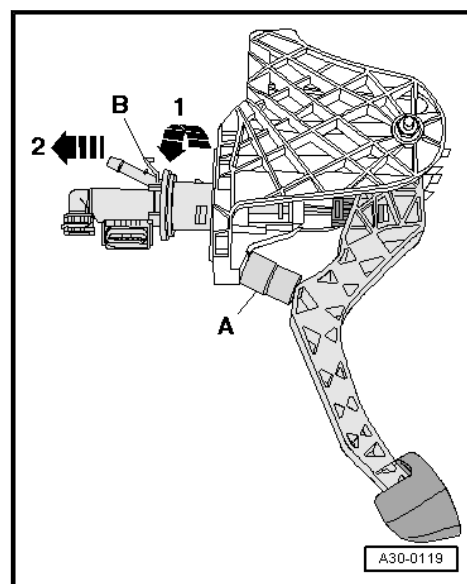


2.6.1 Removing

- Remove the mounting bracket. Refer to ⇒ [B2.5 racket, Removing and Installing", page 38](#) .
- Disengage the mount for the clutch master cylinder actuator rod using the Clutch Pedal Pliers -T10005-.



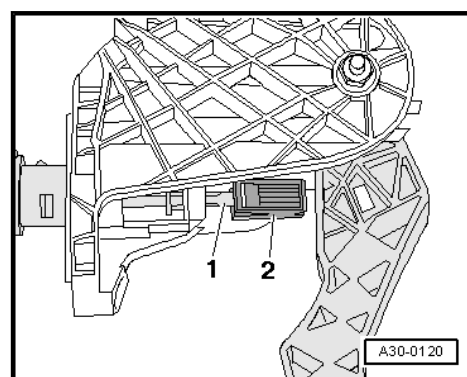
- Place a spacer -A- between the clutch pedal and the stop and then push the clutch pedal as far as the spacer.



- ◆ Length of spacer = approximately 40 mm (for example 1/2" socket insert)
- Disengage the securing bracket -B- and remove the clutch master cylinder from the mounting bracket -arrow 1- and -arrow 2-.

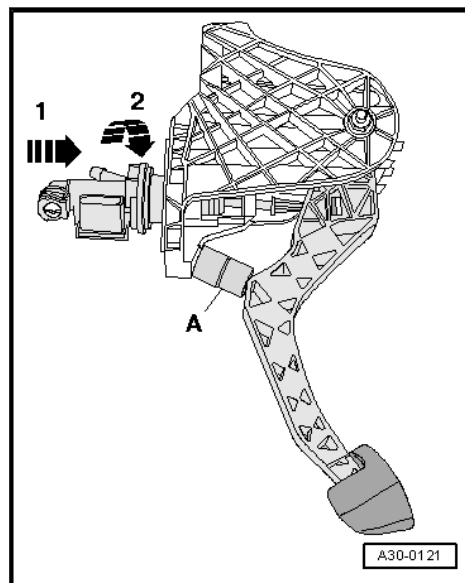
2.6.2 Installing

- Move the clutch pedal up to the stop in its resting position.
- Install the mount -2- on the clutch master cylinder actuator rod -1-.

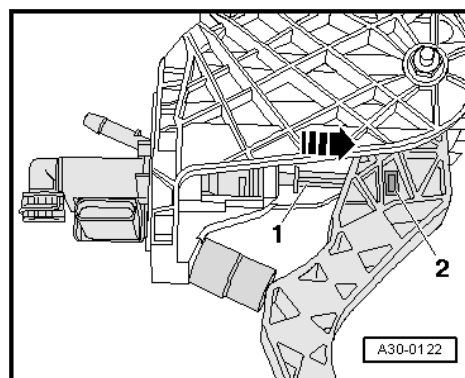




- Place a spacer -A- between the clutch pedal and the stop and then push the clutch pedal as far as the spacer.



- ◆ Length of spacer = approximately 40 mm (for example $\frac{1}{2}$ " socket insert)
- Install the clutch master cylinder on the mounting bracket -arrow 1- and -arrow 2-.
- Push the clutch master cylinder actuator rod -1- in -direction of the arrow- until the mount -2- clicks into the place in the clutch pedal.



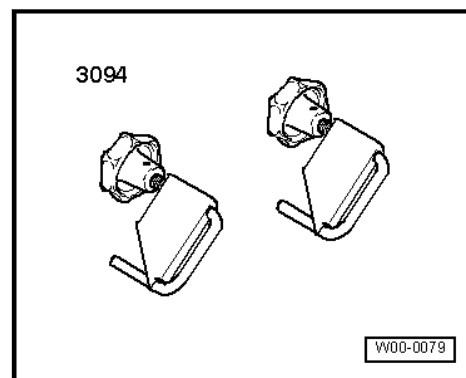
- Install the mounting bracket. Refer to [⇒ B2.5 racket, Removing and Installing](#), page 38 .

2.7 Clutch Position Sensor -G476-, Removing and Installing

Special tools and workshop equipment required



◆ Hose Clamps - Up To 25mm -3094-



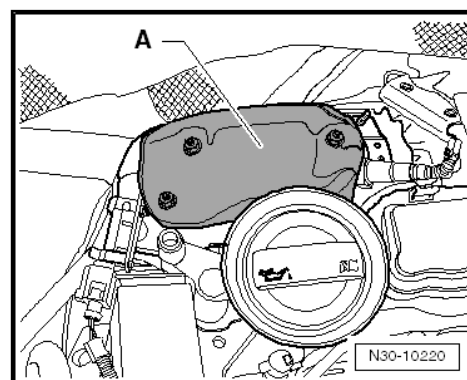
2.7.1 Removing

LHD

- First check whether a coded radio is installed. If this is the case obtain the anti-theft code.
- Disconnect the battery ground cable. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Disconnecting and Connecting.
- Remove entire air filter housing if it is located near the battery. Refer to ⇒ Rep. Gr. 23; Diesel Direct Injection System; Overview - Air Filter or ⇒ Rep. Gr. 24; Fuel Injection; Air Filter, Removing and Installing.
- Remove the battery and battery tray. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Removing and Installing.

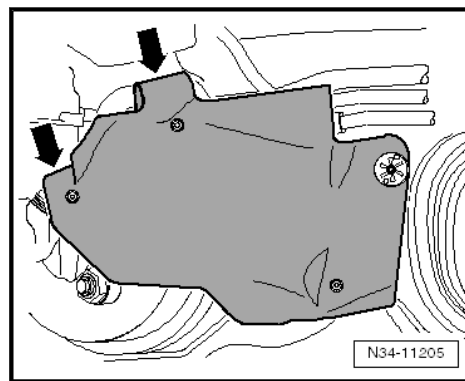
RHD

- For vehicles with a particulate filter, remove the shield -A- from the particulate filter. Refer to ⇒ Rep. Gr. 26; Exhaust System Components; Overview - Front Exhaust Pipe with Particulate Filter.

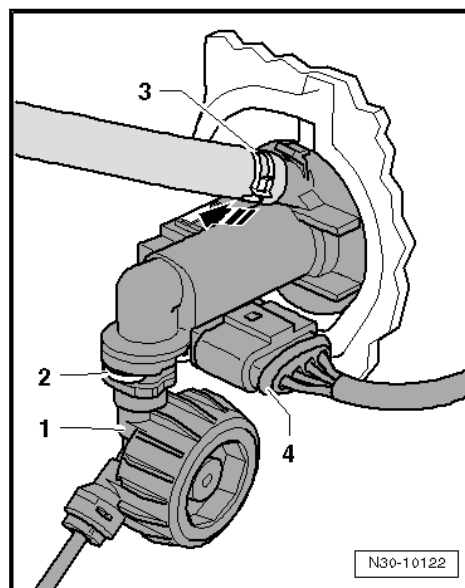


Some engines have a heat shield.

- Remove the heat shield from the hose/line assembly -arrows-.



Continuation for All



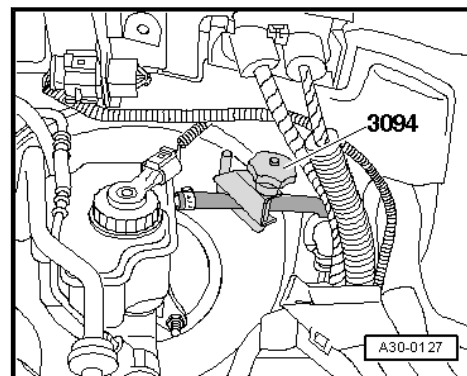
If a hose/line assembly -1- with a round component is installed directly below the clutch master cylinder, hose/line assembly must be removed.



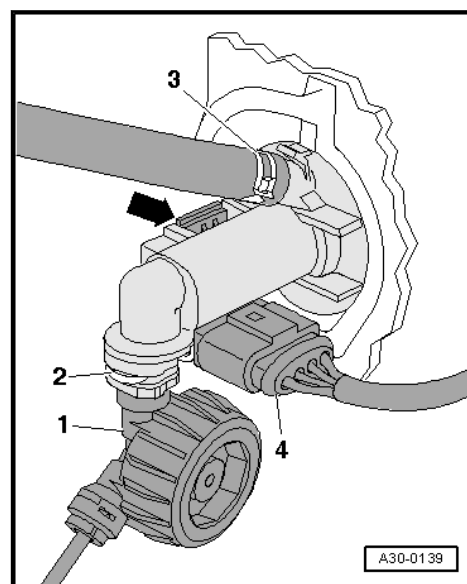
Note

While performing the following work, make sure no brake fluid comes into contact with the longitudinal member or the transmission. If it does, clean the area thoroughly.

- Place a lint-free cloth under the clutch master cylinder.
- Clamp off the hose to the clutch master cylinder using Hose Clamps - Up To 25mm -3094-.



- Disengage the clamp -2- using a screwdriver or a pointed tool and pull the clutch master cylinder out until it stops.



- Remove the hose/line assembly -1- and the pipe from the clutch master cylinder and seal it off.
- Disconnect the connector -4-.
- Unclip the Clutch Position Sensor -G476- from the clutch master cylinder -arrow- and remove it.



Note

Ignore item -3-.

2.7.2 Installing

Install in reverse order of removal while noting the following:



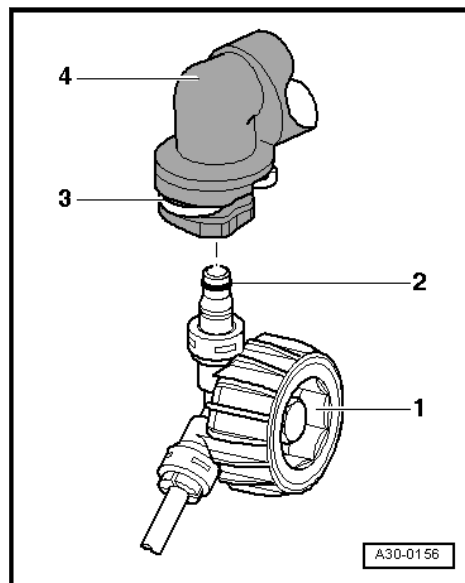
Note

- ◆ Replace the hose clamps.
- ◆ Allocate all components according to the ⇒ Electronic Parts Catalog (ETKA).



If the hose/line assembly was removed:

- Install the hose/line assembly -1- and the pipe line with the seal -2- on the clutch master cylinder connection -4- until the clip -3- audibly engages.



- Pull on the hose/line assembly or pipe to make sure it is secure.
- After removing the Hose Clamps - Up To 25mm -3094-, bring the return hose back to its original shape.
- Bleed the clutch mechanism. Refer to [⇒ M2.9 echanism, Bleeding”, page 55](#) .

LHD

- Install the battery tray and the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Removing and Installing.
- Install entire air filter housing if it is located near the battery. Refer to ⇒ Rep. Gr. 23; Diesel Direct Injection System; Overview - Air Filter or ⇒ Rep. Gr. 24; Fuel Injection; Air Filter, Removing and Installing.
- Connect the battery and follow the steps for after connecting the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Disconnecting and Connecting.

2.8 Overview - Hydraulics, LHD



1 - Brake Fluid Reservoir

2 - Spring Clamp

- ☐ not on all vehicles

3 - Hose

- ☐ Made of rubber
- ☐ As of 12/2005, made of plastic. Refer to ➤ [Fig. "Plastic hose -1-"](#), page 55.

4 - Clutch Master Cylinder

- ☐ Removing and Installing. Refer to ➤ [M2.6 aster Cylinder, Removing and Installing](#), page 46.

5 - Clip

- ☐ To remove and install the hose/line assembly or pipe, pull the clamp all the way out.
- ☐ On some clutch master cylinders, it is pulled out on the side

6 - Seal/O-Ring

- ☐ Install on the line connection
- ☐ Install with brake fluid
- ☐ Seals/O-rings suitable for the line connection version. Refer to ➤ [Fig. "Seals/O-Rings for Hose/Line Assembly or Pipe"](#), page 54.
- ☐ Allocation. Refer to the ➤ Electronic Parts Catalog (ETKA).

7 - Mount

- ☐ To remove and install, disconnect the clutch master cylinder from the clutch pedal. Refer to ➤ [P2.4 edal, Removing and Installing](#), page 32.

8 - Clutch Pedal

- ☐ Removing and Installing. Refer to ➤ [P2.4 edal, Removing and Installing](#), page 32.

9 - Hex Nut, 25 Nm

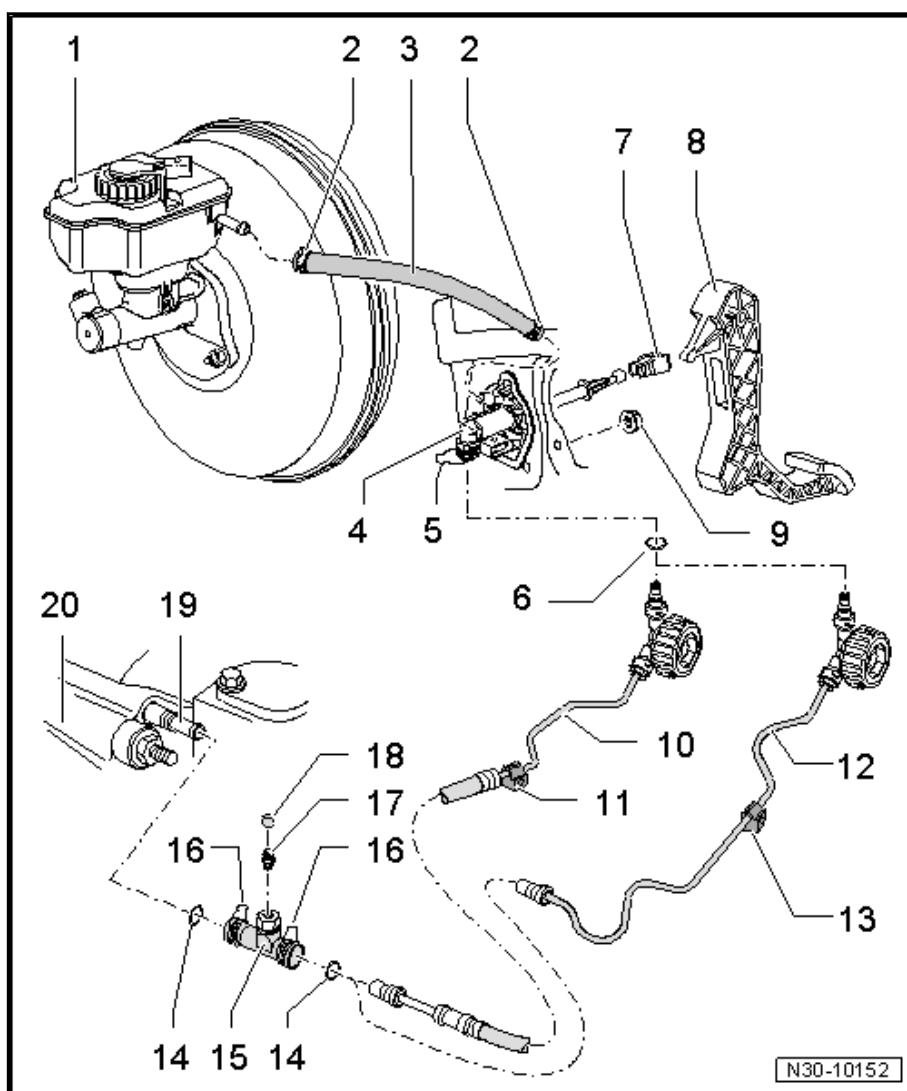
- ☐ Self-locking
- ☐ Quantity: 3
- ☐ For the mounting bracket to the bulkhead
- ☐ Replace after removing

10 - Hose/Line Assembly

- ☐ Allocation. Refer to the ➤ Electronic Parts Catalog (ETKA).
- ☐ To remove, remove the battery and battery tray. Refer to ➤ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Removing and Installing.
- ☐ Removing and Installing. Refer to ➤ [A3.3 ssembly or Pipe, Removing and Installing](#), page 62.

11 - Bracket

- ☐ For hose/line assembly ➤ [Item 10 \(page 53\)](#)
- ☐ Attached to the body



N30-10152



- ☐ Covered by assembly mounts
- ☐ Bracket differentiation. Refer to ➤ [Fig. “Bracket Differentiation”, page 55](#) .

12 - Line

- ☐ Allocation. Refer to the ➤ Electronic Parts Catalog (ETKA).
- ☐ To remove, remove the battery and battery tray. Refer to ➤ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Removing and Installing.
- ☐ Removing and Installing. Refer to ➤ [A3.3 ssembly or Pipe, Removing and Installing”, page 62](#) .

13 - Bracket

- ☐ For the pipe ➤ [Item 12 \(page 54\)](#)
- ☐ Attached to the body
- ☐ Covered by assembly mounts
- ☐ Bracket differentiation. Refer to ➤ [Fig. “Bracket Differentiation”, page 55](#) .

14 - Seal/O-Ring

- ☐ Install on the line connection
- ☐ Install with brake fluid
- ☐ Seals/O-rings suitable for the line connection version. Refer to ➤ [Fig. “Seals/O-Rings for Hose/Line Assembly or Pipe”, page 54](#) .
- ☐ Allocation. Refer to the ➤ Electronic Parts Catalog (ETKA).

15 - Bleeder

- ☐ Removing and Installing. Refer to ➤ [A3.1 ssembly and Bleeder on the Clutch Slave Cylinder, Removing and Installing”, page 60](#) .

16 - Clip

- ☐ To remove and install the hose/line assembly or pipe and the bleeder, pull the clip all the way out.

17 - Bleeder Valve

- ☐ Bleeding the clutch mechanism. Refer to ➤ [M2.9 echanism, Bleeding”, page 55](#) .

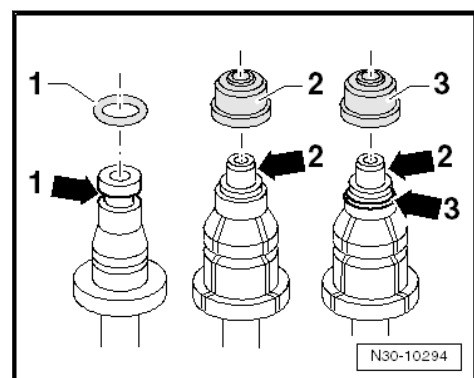
18 - Dust Cap

19 - Clutch Slave Cylinder

- ☐ Can only be replaced when the transmission is removed
- ☐ Removing and Installing. Refer to ➤ [S3.2 lave Cylinder with Release Bearing, Removing and Installing”, page 60](#) .

20 - Transmission

Seals/O-Rings for Hose/Line Assembly or Pipe

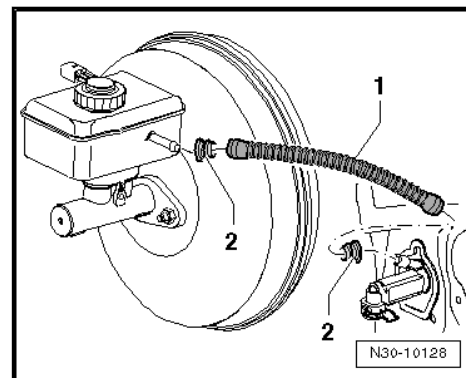


Item	Line connection version
1	Line connection with a groove all the way around -arrow 1-
2	Line connection with collar -arrow 2-



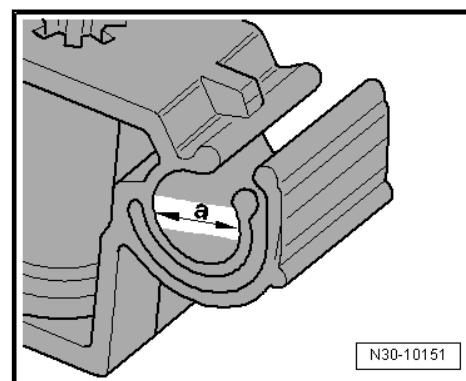
Item	Line connection version
3	Line connection with collar -arrow 2- and with groove all the way around -arrow 3-

Plastic hose -1-



- The seals -2- must be inside the hose.

Bracket Differentiation

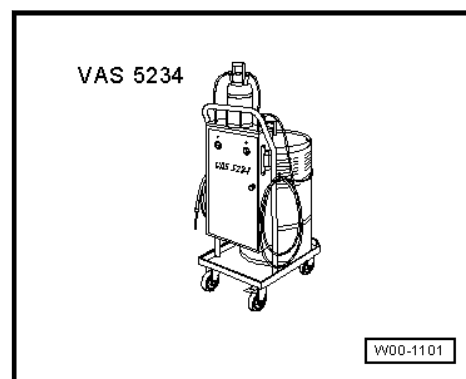


Dimension "a" in mm	Line version
8	Line
6	Hose/Line Assembly

2.9 Clutch Mechanism, Bleeding

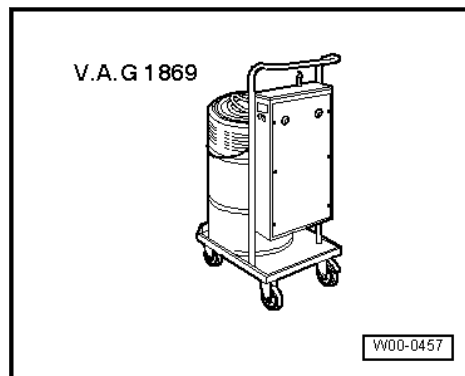
Special tools and workshop equipment required

- ◆ Brake Filling and Bleeding Equipment -VAS 5234- or





◆ Brake Charge and Bleed Equipment -V.A.G 1869-



Note

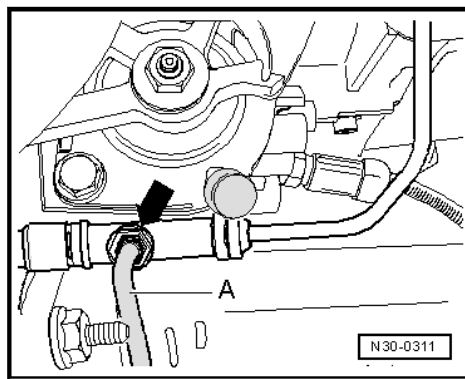
It is not necessary to pre-fill the system.

Brake fluid specification. Refer to ⇒ Brake System; Rep. Gr. 47; Brake System, Bleeding.

- Remove entire air filter housing if it is located near the battery. Refer to ⇒ Rep. Gr. 23; Diesel Direct Injection System; Overview - Air Filter or ⇒ Rep. Gr. 24; Fuel Injection; Air Filter, Removing and Installing.
- Connect the Brake Filling and Bleeding Equipment -VAS 6860- or -V.A.G 1869-.

It may be necessary to use the Bleeder Hose (670 mm) -V.A.G 1238/B3- for the bleeding procedure.

- Connect the bleed hose to the brake bleeder unit collector bottle.
- Connect the bleeder hose -A- to the bleeder -arrow-.



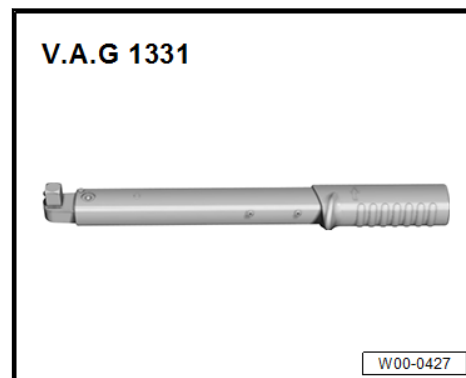
- Apply 2 bar pressure to the system.
- Open the breather valve approximately $\frac{1}{4}$ turn.
- Move the clutch pedal 15 to 20 times rapidly by hand from stop to stop.
- Close the bleeder valve and switch off the bleed unit.
- After completing the bleeding procedure, and the pressure has dropped from 2 bar, press the clutch pedal an additional 10 times by foot.
- If it was removed earlier install the complete air filter housing. Refer to ⇒ Rep. Gr. 23; Diesel Direct Injection System; Overview - Air Filter or ⇒ Rep. Gr. 24; Fuel Injection System; Air Filter, Removing and Installing.



3 Clutch Release Mechanism, Servicing

Special tools and workshop equipment required

- ◆ Torque Wrench 1331 5-50Nm -V.A.G 1331-





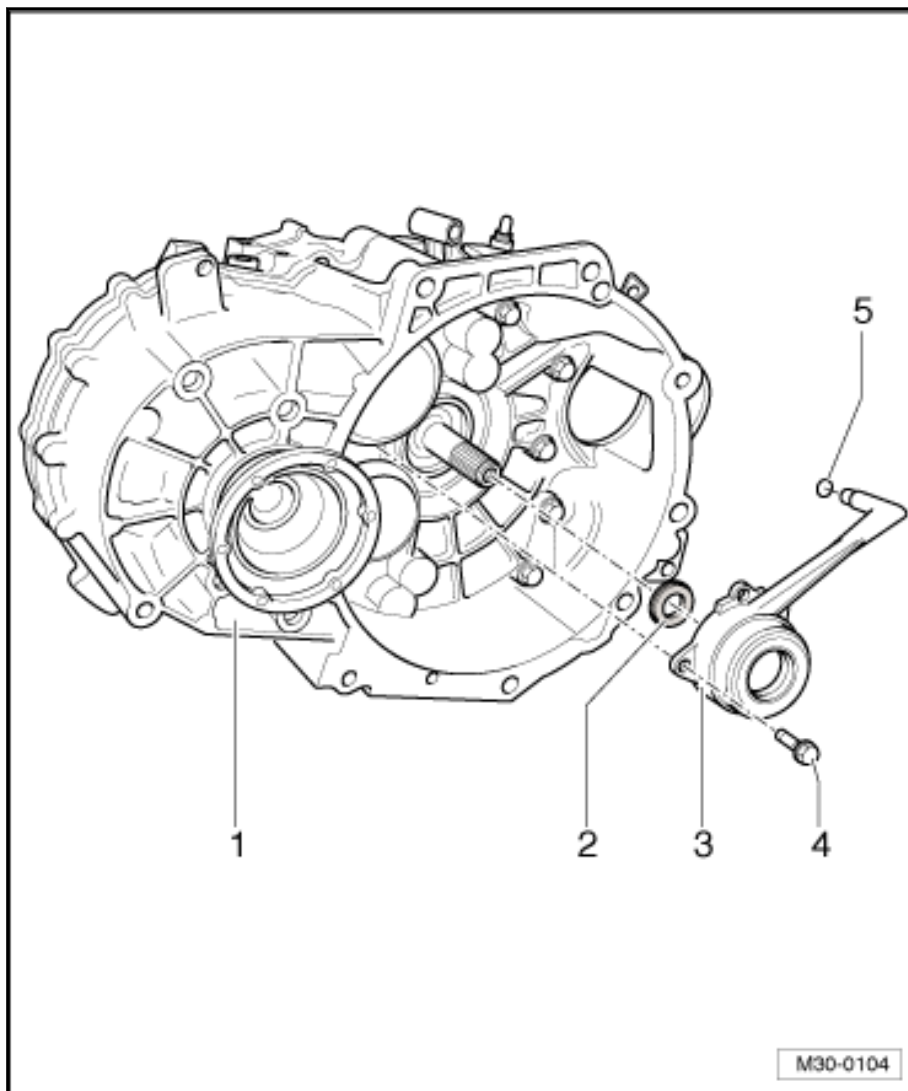
1 - Transmission

2 - Input Shaft Seal

- ❑ Replacing. Refer to ➤ [S3.4 Input Shaft Seal, Replacing](#), page 64.

3 - Clutch Slave Cylinder with Release Bearing

- ❑ Must be replaced together because they are a single unit
- ❑ Do not wash the bearing, just wipe it off.
- ❑ Replace any loud bearings together with the clutch slave cylinder
- ❑ Some clutch slave cylinders have a divided feed line. Refer to ➤ Fig. "Clutch slave cylinder -A- with divided supply line", page 59.
- ❑ Removing and Installing. Refer to ➤ [S3.2 Clutch Slave Cylinder with Release Bearing, Removing and Installing](#), page 60.
- ❑ Approximately from 05/2011: release bearing with an additional plastic washer (refer to ➤ Fig. "Approximately from 05/2011: release bearing with an additional plastic washer", page 59), pressure plate is adapted (refer to ➤ Fig. "Only for release bearing with additional plastic washer: pressure plate diaphragm spring (-arrows-) with a slightly lower installation height.", page 59)
- ❑ Allocation. Refer to the ➤ Electronic Parts Catalog (ETKA).



4 - Bolt

- ❑ Quantity: 3
- ❑ Replace after removing
- ❑ Without locking compound 12 Nm (clutch slave cylinder with metal housing only)
- ❑ With locking fluid 15 Nm (for plastic clutch slave cylinders)
- ❑ Carefully tighten diagonally and in small steps so that the eyelets on the clutch slave cylinder do not break



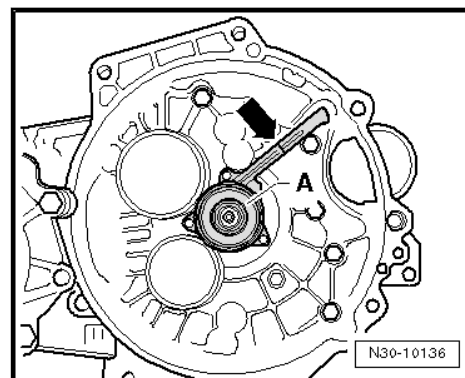
Note

Pay attention to the bolt thread pitch when cleaning the threaded hole in the clutch housing.

5 - O-Ring

- ❑ Install on the line connection
- ❑ Install with brake fluid
- ❑ Allocation. Refer to the ➤ Electronic Parts Catalog (ETKA).

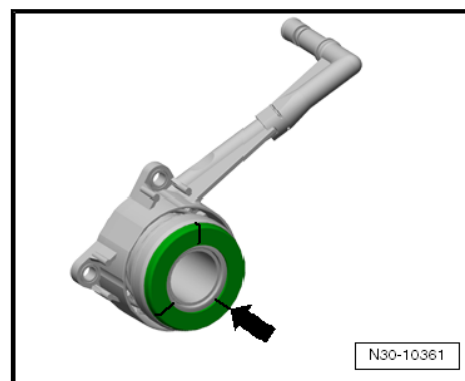
Clutch slave cylinder -A- with divided supply line



The supply line is divided in area with -arrows- on some clutch slave cylinders

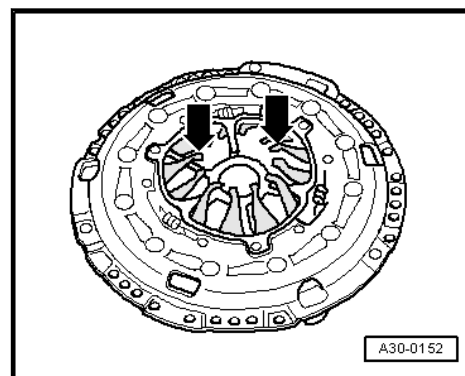
Allocation. Refer to the ⇒ Electronic Parts Catalog (ETKA).

Approximately from 05/2011: release bearing with an additional plastic washer



Identified by: tabs -arrow- on the plastic washer.

Only for release bearing with additional plastic washer: pressure plate diaphragm spring (-arrows-) with a slightly lower installation height.



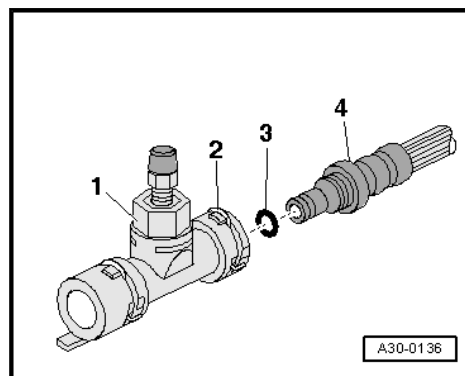
- Only install adapted release bearing and adapted pressure plate together.

Allocation. Refer to the ⇒ Electronic Parts Catalog (ETKA).



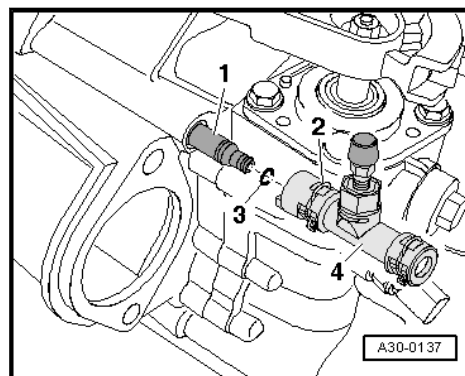
3.1 Line Assembly and Bleeder on the Clutch Slave Cylinder, Removing and Installing

Hose/Line Assembly or Pipe on Bleeder, Removing and Installing



- To remove, open the clip -2- with a screwdriver or a pointed tool and pull off hose/line assembly or pipe -4- at bleeder -1-.
- To install, press hose/line assembly or pipe with the new O-ring -3- into connection of bleeder, until clip audibly engages.
- Pull on the line to make sure it is secure.

Bleeder at clutch slave cylinder, removing and installing



- To remove, open the clip -2- with a screwdriver or a pointed tool and remove bleeder -4- from clutch slave cylinder -1-.
- To install, check the O-ring -3- on the clutch slave cylinder. Press in bleeder at clutch slave cylinder connector until clip engages audibly.
- To check, pull on the bleeder.
- Bleed the clutch mechanism. Refer to [⇒ M2.9 echanism, Bleeding", page 55](#).

3.2 Clutch Slave Cylinder with Release Bearing, Removing and Installing



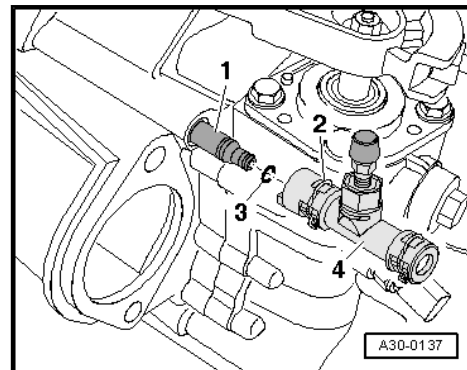
Note

The clutch slave cylinder and the release bearing are a single unit and are replaced together.

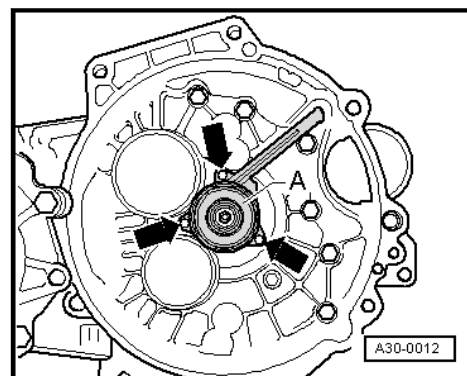


Removing

- Remove the transmission.
- Open the clip -2- with a screwdriver or a pointed tool and remove bleeder -4- from clutch slave cylinder -1-.



- Remove the bolts -arrows-.



- Remove the clutch slave cylinder and the release bearing -A-.

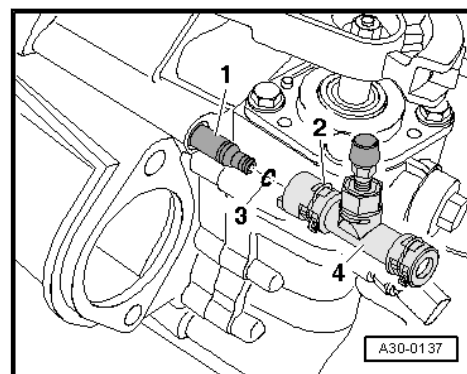
Installing

Install in reverse order of removal while noting the following:

- Tighten the slave cylinder bolts in small increments only.

Otherwise, there is the danger that the tabs with the fastening holes could break off.

- Fasten the clutch slave cylinder with release bearing ➔ [Item 4 \(page 58\)](#).
- .
- Check the O-ring -3- on the clutch slave cylinder for damage.



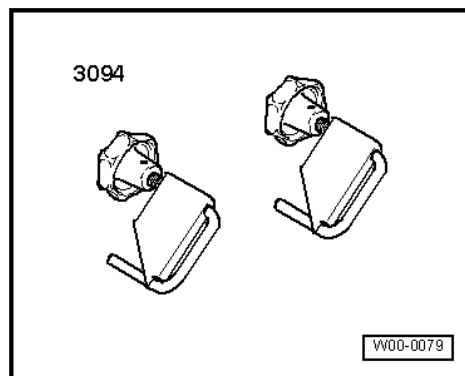


- Install the bleeder -4- on the connection on the clutch slave cylinder -1- until the clip -2- clicks into the place.
- To check, pull on the bleeder.
- Install the transmission.
- Bleed the clutch mechanism. Refer to ⇒ [M2.9 Mechanism, Bleeding](#), page 55.

3.3 Hose/Line Assembly or Pipe, Removing and Installing

Special tools and workshop equipment required

- ♦ Hose Clamps - Up To 25 mm -3094-



Removing

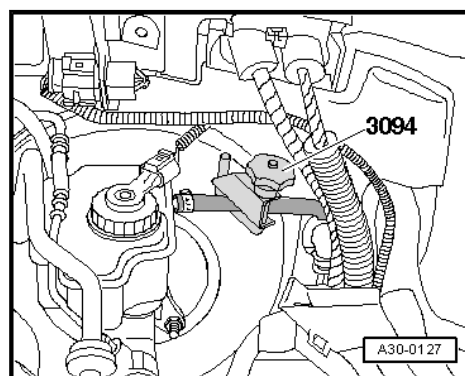
- Removed the complete air filter housing. Refer to ⇒ Rep. Gr. 23; Diesel Direct Injection System; Overview - Air Filter or ⇒ Rep. Gr. 24; Fuel Injection System; Air Filter, Removing and Installing.



Note

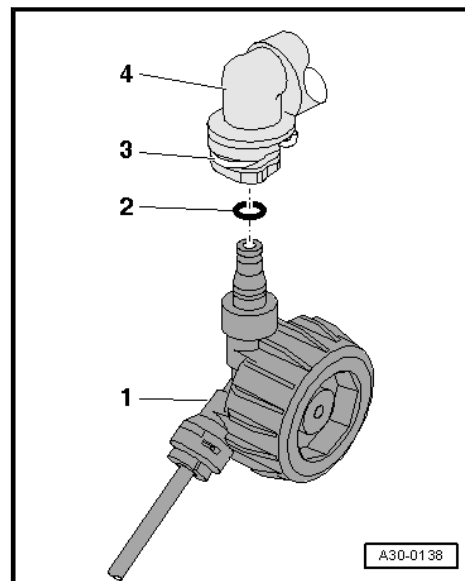
While performing the following work, make sure no brake fluid comes into contact with the longitudinal member or the transmission. If it does, clean the area thoroughly.

- Clamp off the clutch master cylinder hose using Hose Clamps - Up To 25 mm -3094-.



Remove the hose/line assembly or pipe from the clutch master cylinder as follows:

- Open the clip -3- with a screwdriver or a pointed tool and remove the line -1- with the O-ring -2-.

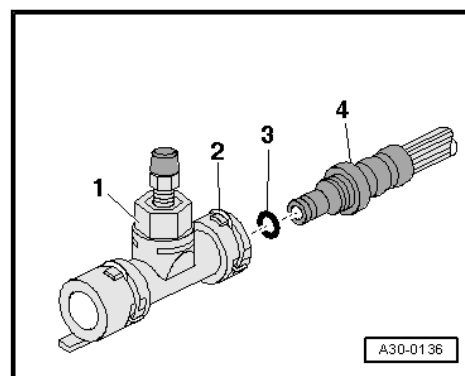


Caution

Do not press the clutch pedal after removing the line.

Remove the hose/line assembly or pipe from the bleeder as follows:

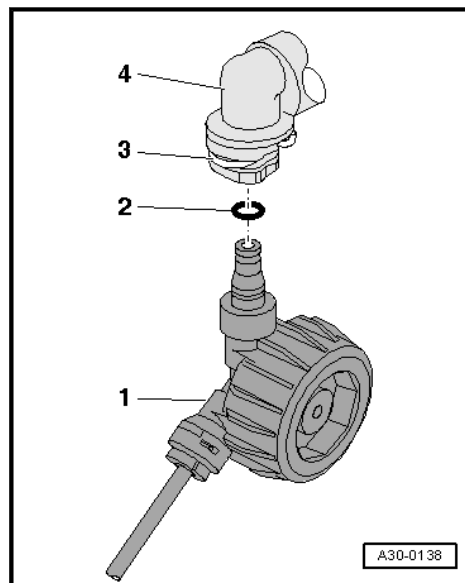
- Remove the circlip -2- with a screwdriver or a pointed tool and remove the line -4- with O-ring -3- from the bleeder -1-.



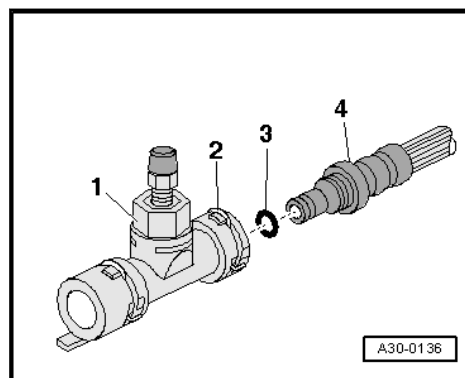
Installing

Install in reverse order of removal while noting the following:

- Install the hose/line assembly and pipe line -1- with the O-ring -2- on the clutch master cylinder connection -4- until the clip -3- audibly engages.



- Pull on the line to make sure it is secure.
- Press the line with O-ring -3- on the bleeder connection until the clip engages.



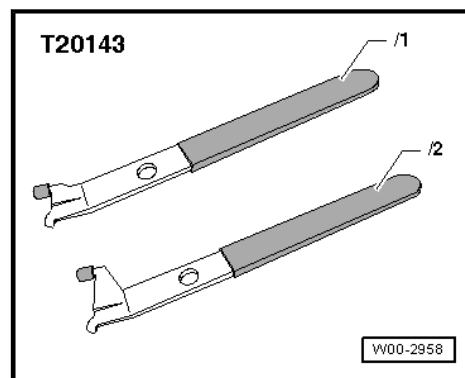
- Pull on the line to make sure it is secure.
- After removing the Hose Clamps - Up To 25mm -3094-, bring the return hose back to its original shape.
- Bleed the clutch mechanism. Refer to ⇒ [M2.9 echanism, Bleeding", page 55](#) .
- Install the complete air filter housing. Refer to ⇒ Rep. Gr. 23; Diesel Direct Injection System; Overview - Air Filter or ⇒ Rep. Gr. 24; Fuel Injection System; Air Filter, Removing and Installing.

3.4 Input Shaft Seal, Replacing

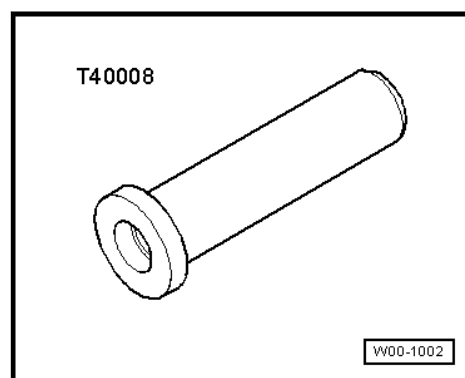
Special tools and workshop equipment required



- ◆ Puller - Crankshaft/Power Steering Seal - 1 -T20143/1-



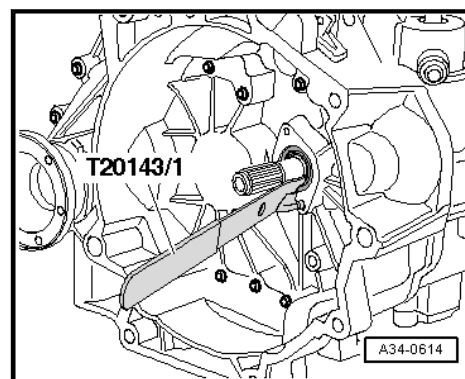
- ◆ Seal Installer - Driveshaft -T40008-



- ◆ Sealing Grease -G 052 128 A1-

Procedure

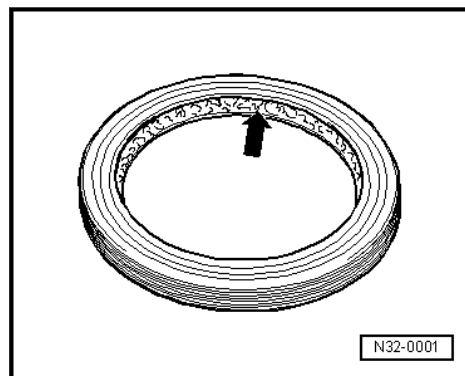
- Remove the transmission.
- Remove the clutch slave cylinder and the release bearing. Refer to ➤ [S3.2 lave Cylinder with Release Bearing, Removing and Installing](#), page 60 .
- Pry out the input shaft seal using Puller - Crankshaft/Power Steering Seal -T20143/1-.



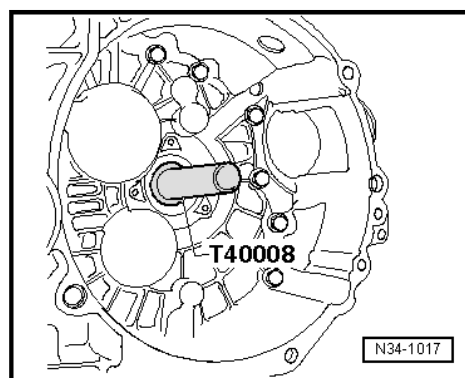
Note

Be careful not to damage the contact surface for the seal on the input shaft.

- Fill the space between the sealing and dust lip -arrow- half-way with Sealing Grease -G 052 128 A1-.



- Lightly coat the outer circumference of the seal with transmission fluid.
- Drive in the seal using the Seal Installer - Driveshaft - T40008- until it is flush.

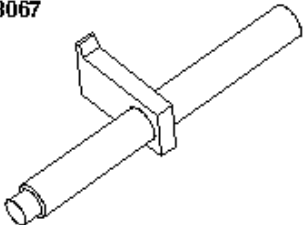
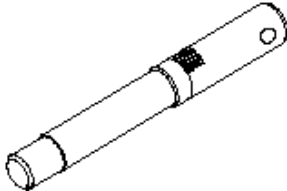
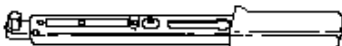


- Install the clutch slave cylinder and the release bearing. Refer to ➔ [S3.2 lave Cylinder with Release Bearing, Removing and Installing](#), page 60 .
- Install the transmission.

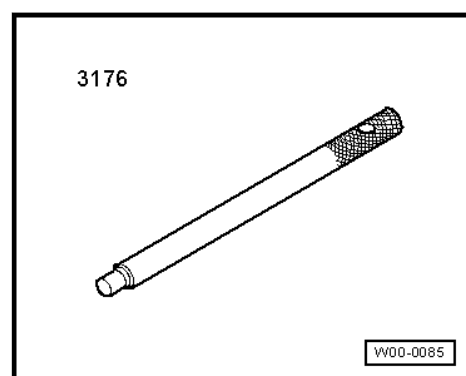


4 Clutch, Servicing, Diesel

Special tools and workshop equipment required

<p>3067</p> 	<p>T10097</p> 
<p>V.A.G 1331</p> 	
	<p>W30-0022</p>

- ◆ Flywheel Retainer -3067-
- ◆ Alignment Tool - Clutch Plate -T10097-
- ◆ Torque Wrench 1331 5-50Nm -V.A.G 1331-
- ◆ Lubricating Grease for Clutch Plate Splines -G 000 100-
- ◆ For engines that have a crankshaft with a smaller diameter, or engines with a needle bearing in the crankshaft, use the Alignment Tool - Clutch Plate -3176-. Refer to ➤ [Fig. "Centering the clutch plate, removing and installing the pressure plate on engines with a crankshaft with a smaller diameter, or engines with a needle bearing in the crankshaft."](#), page 72 .





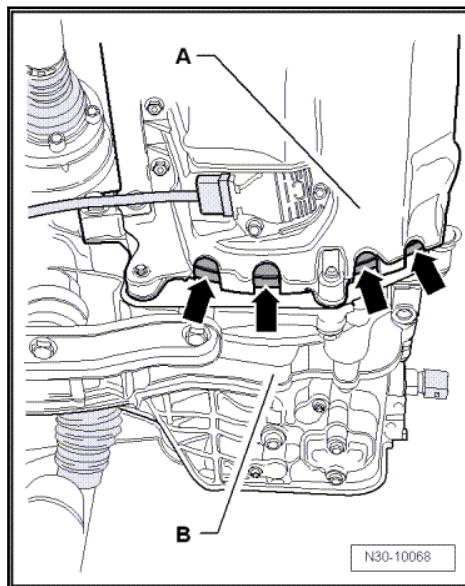
4.1 Determining Clutch Manufacturer

Either a "Sachs" or a "LuK" clutch may be installed.

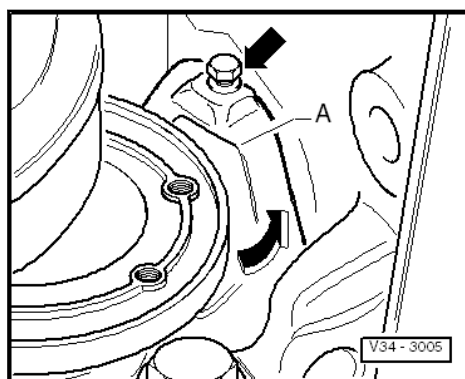
The clutch manufacturer can be determined as follows with the transmission installed:

- Remove the noise insulation. Refer to ➤ Body Exterior; Rep. Gr. 50; Noise Insulation; Overview - Noise Insulation.
- Remove the noise insulation from the engine oil pan, if necessary.

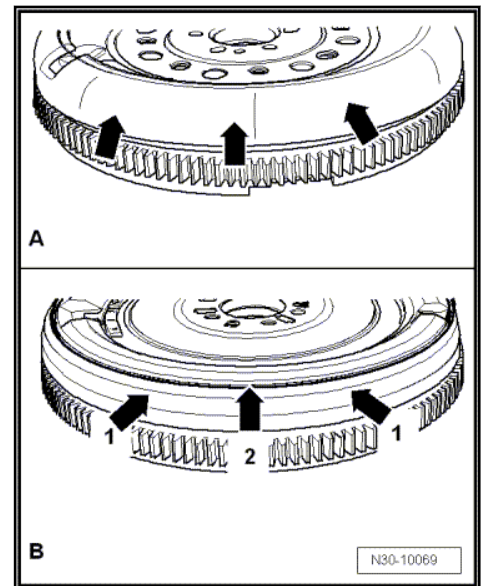
There are several cut-outs -arrows- between the engine -A- and the transmission -B- at the bottom of the engine oil pan.



- Check the outer contour of the flywheel through these cut-outs.
- The outer contour of the flywheel can also be inspected by removing -arrows- the small cover plate -A-.



Round outer contour -arrows- = clutch made by Sachs = -A-

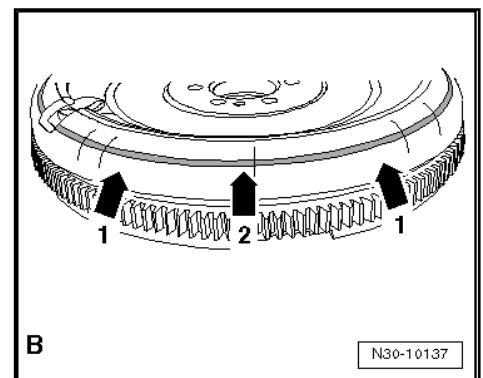


- To remove and install a Sachs clutch, refer to [⇒ S4.2 achs Clutch, Removing and Installing](#), page 69 .
- To service a Sachs clutch, refer to [⇒ S4.3 achs Clutch, Servicing](#), page 73 .

Cornered outer contour -1 arrows- and also a seam all the way around -arrow 2- = LuK clutch = -B-

or

Round outer contour -1 arrows- and a seam all the way around -arrow 2- = LuK clutch = -B-

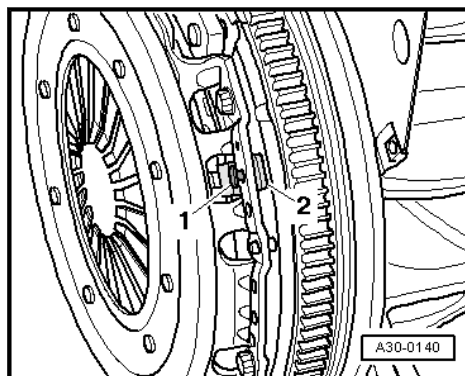


- To remove and install a LuK clutch, refer to [⇒ L4.4 uK Clutch, Removing and Installing](#), page 74 .
- To service a LuK clutch, refer to [⇒ S4.5 ervicing, LuK](#) , page 78 .

4.2 “Sachs” Clutch, Removing and Installing

Removing

- Remove the transmission.
- Insert Flywheel Retainer -3067- to loosen the bolts.
- Loosen the bolt diagonally in small steps.



- When loosening, the stop -2- and the bolt -1- must loosen up together.
- If the stop does not loosen: push the bolt toward the dual mass flywheel.
- Remove the pressure plate and the clutch plate.

Installing

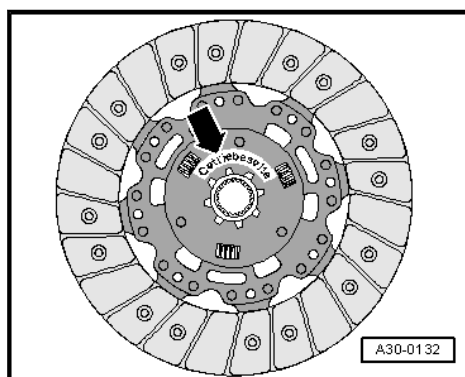
Install in reverse order of removal while noting the following:



Note

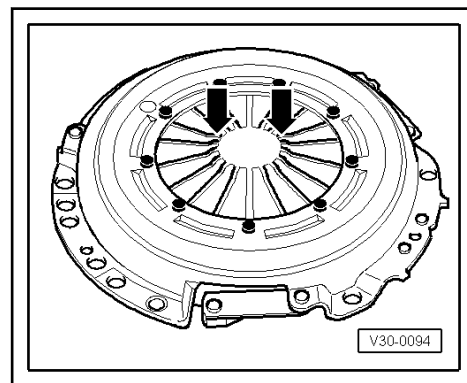
- ◆ Allocate thrust plate and clutch plate according to the engine code. Refer to the ➔ Electronic Parts Catalog (ETKA).
- ◆ Check whether there are centering sleeves for the engine/transmission in the cylinder block; install if necessary.
- ◆ If the alignment sleeves are missing, it will be difficult to shift, there will be clutch problems and the transmission may make noises (loose rattling).

Clutch plate installation position



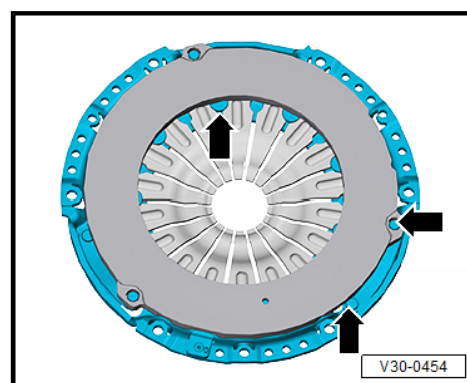
- “Transmission side” label and the spring cage face the transmission.

Check the ends of the diaphragm spring



- Wear up to half the thickness of the diaphragm spring -arrows- is permitted.

Checking the spring connections and rivet connections

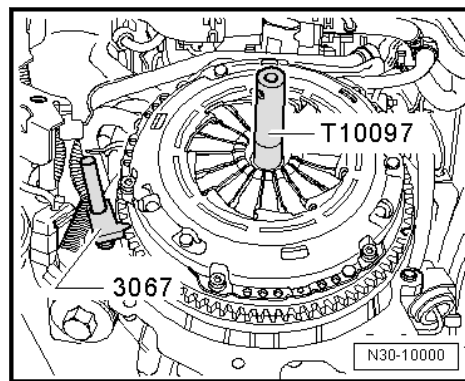


- Check the spring connections between the pressure plate and the cover for cracks and make sure the rivet connections are tight.
- Replace the pressure plate if the spring connections are damaged or if the rivet connections -arrows- are loose.

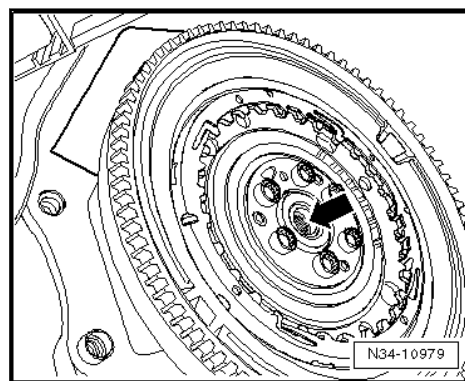


Note

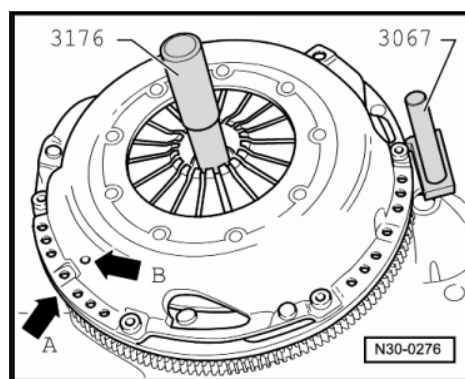
- ◆ *Replace the clutch plates and pressure plates if the rivets are damaged or loose.*
- ◆ *Allocate clutch plate and thrust plate using the engine code. Refer to the ➤ Electronic Parts Catalog (ETKA).*
- ◆ *Clean the input shaft splines and the hub splines (on a used clutch plate), remove any corrosion and only apply a very thin layer of Lubricating Grease for Clutch Plate Splines -G 000 100- on the splines. Then move the clutch plate back and forth on the input shaft until the hub moves freely on the shaft. Remove any excess grease.*
- ◆ *The pressure plates are protected from corrosion and lubricated. Only the running surfaces may be cleaned. Otherwise the service life of the clutch will be shortened considerably.*
- ◆ *The pressure plate contact surface and the clutch plate lining must completely contact the flywheel. Install the bolts.*
- Move the Flywheel Retainer -3067- during installation.



Engines having a crankshaft with a smaller diameter -arrow-, or engines having a needle bearing -arrow- in the crankshaft



Centering the clutch plate, removing and installing the pressure plate on engines with a crankshaft with a smaller diameter, or engines with a needle bearing in the crankshaft.



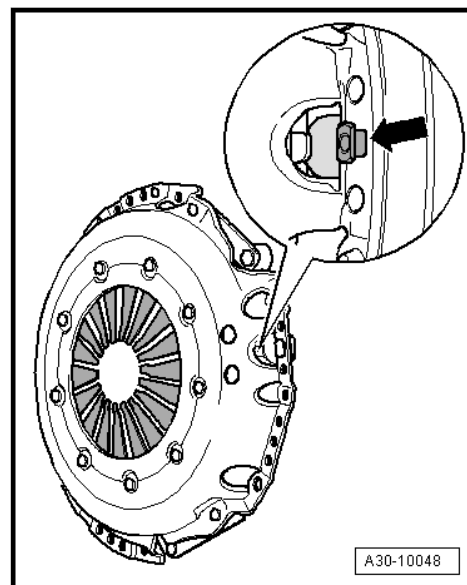
Note

Ignore arrows -A- and -B-.



Continuation for All

When installing, tighten bolts as follows so pressure plate does not distort (causing shuddering on acceleration):



- Make sure the stop pin (position sensor) -arrow- moves easily.
- Position the pressure plate on the centering pins.
- Install all the bolts evenly, by hand, until the bolt heads contact the pressure plate.
- When doing this, the stop pin -arrow- must lift off from the pressure plate.
- Tighten the bolts in small steps and in diagonal sequence to prevent damaging the centering holes of the pressure plate and the centering pins of the dual mass flywheel -Item 4- ➤ [Item 4 \(page 74\)](#) .
- Install the transmission.

4.3 “Sachs” Clutch, Servicing

1 - Dual Mass Flywheel

- ☐ Removing and Installing. Refer to ➤ Rep. Gr. 13.
- ☐ Make sure it fits securely on the centering pins
- ☐ Keep the clutch lining contact surface free of grooves, oil and grease.

2 - Clutch Plate

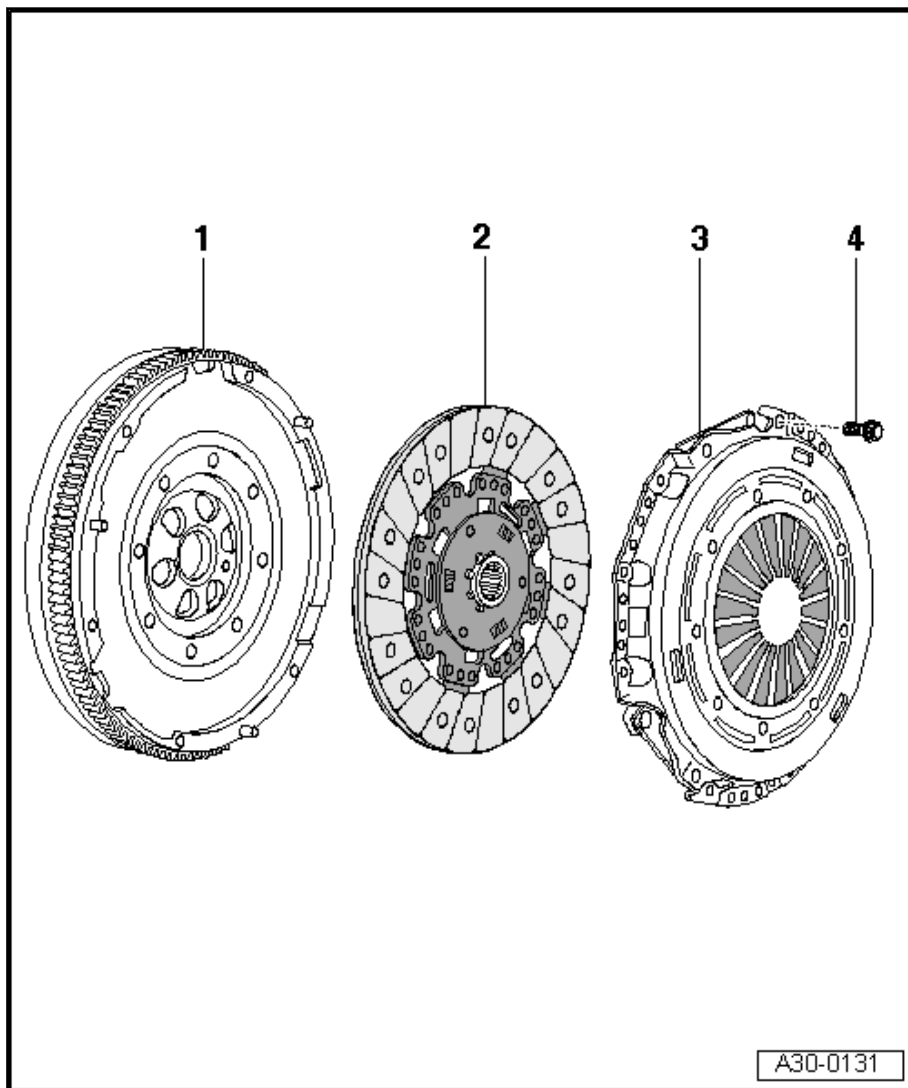
- ☐ Allocation. Refer to the ➤ Electronic Parts Catalog (ETKA).
- ☐ Only replace together with the pressure plate
- ☐ Removing and Installing. Refer to ➤ [S4.2 achs Clutch, Removing and Installing", page 69](#).
- ☐ Installation position. Refer to ➤ [Fig. "Clutch plate installation position", page 70](#).

3 - Pressure Plate

- ☐ With adjustment mechanism
- ☐ Allocation. Refer to the ➤ Electronic Parts Catalog (ETKA).
- ☐ Only replace together with the clutch plate
- ☐ Removing and Installing. Refer to ➤ [S4.2 achs Clutch, Removing and Installing", page 69](#).
- ☐ Diaphragm Spring Ends, Checking. Refer to ➤ [Fig. "Check the ends of the diaphragm spring", page 70](#).
- ☐ Checking the spring connections and rivet connections. Refer to ➤ [Fig. "Checking the spring connections and rivet connections", page 71](#).

4 - M6 Bolt: 13 Nm; M7 Bolt: 20 Nm

- ☐ Allocation. Refer to the ➤ Electronic Parts Catalog (ETKA).
- ☐ Loosen and tighten in small steps and in diagonal sequence



4.4 "LuK" Clutch, Removing and Installing

Removing

- Remove the transmission.
- Insert Flywheel Retainer -3067- to loosen the bolts.
- Loosen the bolt diagonally in small steps.
- Remove the pressure plate and the clutch plate.

Installing

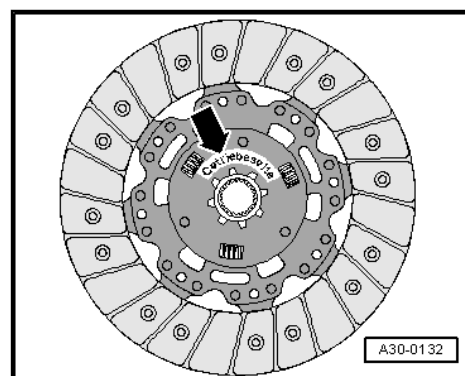
Install in reverse order of removal while noting the following:



Note

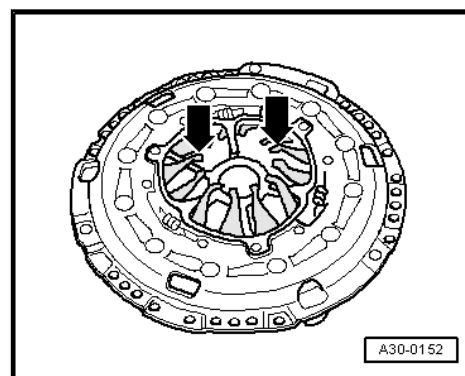
- ◆ Allocate thrust plate and clutch plate according to the engine code. Refer to the ➤ Electronic Parts Catalog (ETKA).
- ◆ Check whether there are centering sleeves for the engine/transmission in the cylinder block; install if necessary.
- ◆ If the alignment sleeves are missing, it will be difficult to shift, there will be clutch problems and the transmission may make noises (loose rattling).

Clutch plate installation position



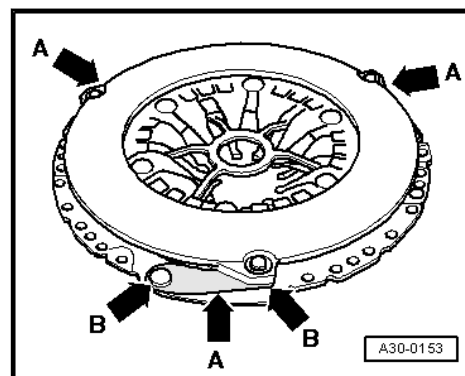
- "Transmission side" label faces the transmission.

Check the ends of the diaphragm spring



- Wear up to half the thickness of the diaphragm spring -arrows- is permitted.

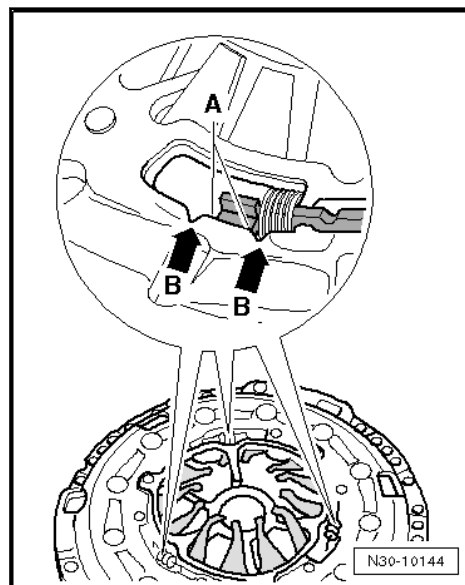
Checking the spring connections and rivet connections





- Check the spring connections -arrows A- for damage and make sure the rivet connections -arrows B- are tight.

Only check the position of the adjustment mechanism with new pressure plates

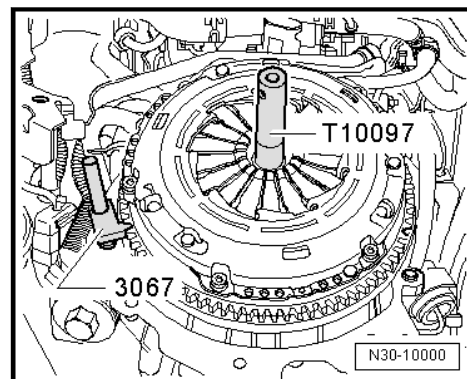


- Both edges -A- of the adjusting ring must be located between both notches -arrows B-.
- If the adjusting ring takes on a different position with new pressure plates, pressure plate and clutch plate must not be installed.
- With used clutches, the adjusting ring may take on a position outside of the notches.

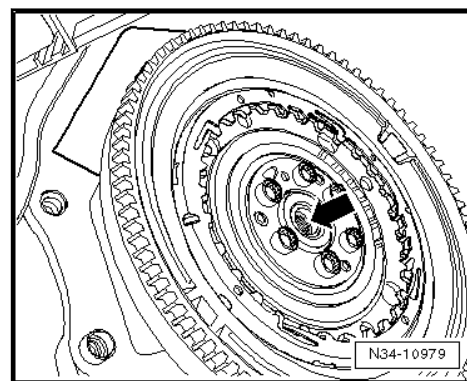


Note

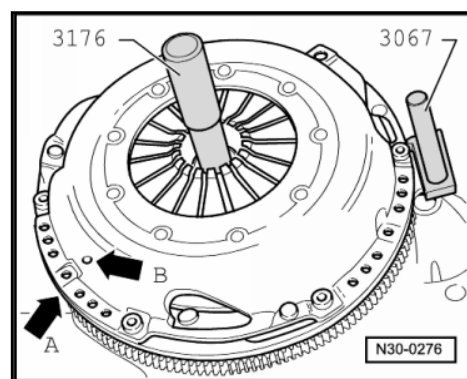
- ◆ *Replace the clutch plates and pressure plates if the rivets are damaged or loose.*
 - ◆ *Replace the pressure plate and the clutch plate together.*
 - ◆ *Allocate clutch plate and thrust plate using the engine code. Refer to the ➔ Electronic Parts Catalog (ETKA).*
 - ◆ *Clean the input shaft splines and the hub splines (on a used clutch plate), remove any corrosion and only apply a very thin layer of Lubricating Grease for Clutch Plate Splines -G 000 100- on the splines. Then move the clutch plate back and forth on the input shaft until the hub moves freely on the shaft. Remove any excess grease.*
 - ◆ *The pressure plates are protected from corrosion and lubricated. Only the running surfaces may be cleaned. Otherwise the service life of the clutch will be shortened considerably.*
 - ◆ *The pressure plate contact surface and the clutch plate lining must completely contact the flywheel. Install the bolts.*
- Move the Flywheel Retainer -3067- during installation.



Engines having a crankshaft with a smaller diameter -arrow-, or engines having a needle bearing -arrow- in the crankshaft



Centering the clutch plate, removing and installing the pressure plate on engines with a crankshaft with a smaller diameter, or engines with a needle bearing in the crankshaft.



Note

Ignore arrows -A- and -B-.

Continuation for All

- Position the pressure plate on the centering pins.
- Install all the bolts evenly, by hand, until the bolt heads contact the pressure plate.
- Tighten the bolts in small steps and in diagonal sequence to prevent damaging the centering holes of the pressure plate and the centering pins of the dual mass flywheel ➔ [Item 4 \(page 78\)](#).
- Install the transmission.

4.5 Clutch, Servicing, "LuK"

1 - Dual Mass Flywheel

- ☐ Removing and Installing. Refer to ➤ Rep. Gr. 13.
- ☐ Make sure it fits securely on the centering pins
- ☐ Keep the clutch lining contact surface free of grooves, oil and grease.

2 - Clutch Plate

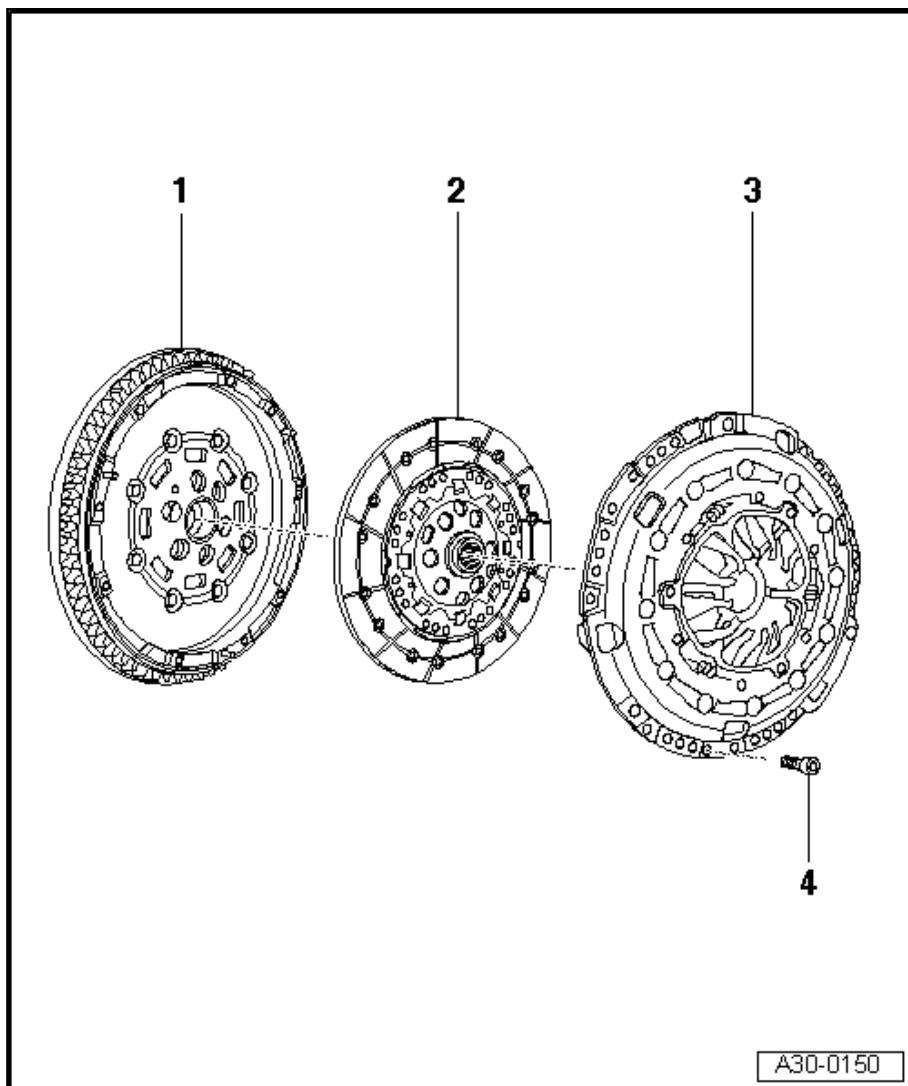
- ☐ Allocation. Refer to the ➤ Electronic Parts Catalog (ETKA).
- ☐ Removing and Installing. Refer to ➤ [L4.4 uK Clutch, Removing and Installing", page 74](#).
- ☐ Only replace together with the SAC pressure plate
- ☐ Installation position. Refer to ➤ [Fig. "Clutch plate installation position", page 75](#)

3 - SAC Pressure Plate

- ☐ SAC = "Self Adjusting Clutch"
- ☐ Only replace together with the clutch plate
- ☐ Allocation. Refer to the ➤ Electronic Parts Catalog (ETKA).
- ☐ Removing and Installing. Refer to ➤ [L4.4 uK Clutch, Removing and Installing", page 74](#).
- ☐ Diaphragm Spring Ends, Checking. Refer to ➤ [Fig. "Check the ends of the diaphragm spring", page 75](#).
- ☐ Checking the spring connections and rivet connections. Refer to ➤ [Fig. "Checking the spring connections and rivet connections", page 75](#).

4 - M6 Bolt: 13 Nm; M7 Bolt: 20 Nm

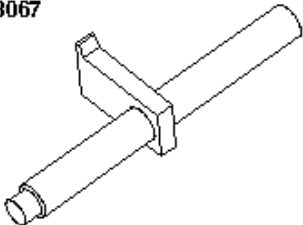
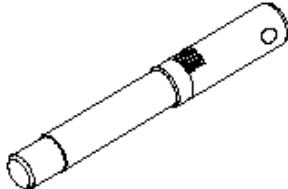
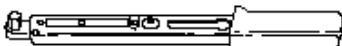
- ☐ Loosen and tighten in small steps and in diagonal sequence



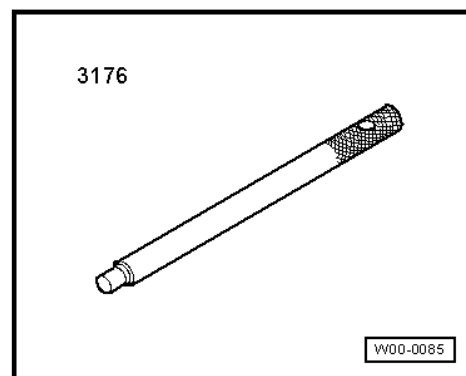


5 Clutch, Servicing, Gasoline

Special tools and workshop equipment required

<p>3067</p> 	<p>T10097</p> 
<p>V.A.G 1331</p> 	
	<p>W30-0022</p>

- ◆ Flywheel Retainer -3067-
- ◆ Alignment Tool - Clutch Plate -T10097-
- ◆ Torque Wrench 1331 5-50Nm -V.A.G 1331-
- ◆ Lubricating Grease for Clutch Plate Splines -G 000 100-
- ◆ For engines that have a crankshaft with a smaller diameter, or engines with a needle bearing in the crankshaft, use the Alignment Tool - Clutch Plate -3176-. Refer to [⇒ page 84](#) .



5.1 Clutch, Servicing



Note

- ♦ Make sure the alignment bushings for centering the engine/transmission are installed inside the cylinder block. Install them if necessary.
- ♦ If the alignment sleeves are missing, it will be difficult to shift, there will be clutch problems and the transmission may make noises (loose rattling).

1 - Dual Mass Flywheel

- ☐ Removing and Installing. Refer to ➤ Rep. Gr. 13.
- ☐ Make sure it fits securely on the centering pins
- ☐ Keep the clutch lining contact surface free of grooves, oil and grease.

2 - Clutch Plate

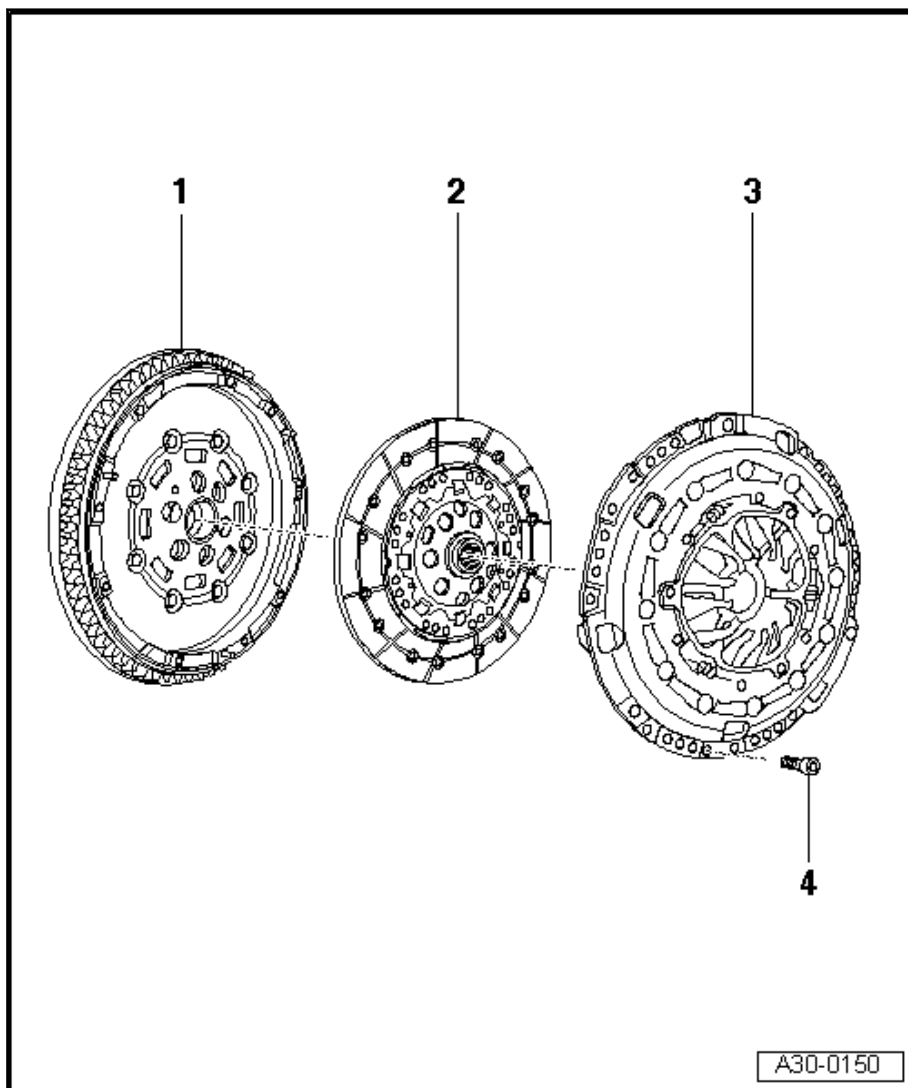
- ☐ Allocation. Refer to the ➤ Electronic Parts Catalog (ETKA).
- ☐ Removing and Installing. Refer to ➤ [R5.2 removing and Installing", page 81](#).
- ☐ Only replace together with the SAC pressure plate
- ☐ Installation position. Refer to ➤ [Fig. "Clutch plate installation position", page 81](#)

3 - SAC Pressure Plate

- ☐ SAC = "Self Adjusting Clutch"
- ☐ Only replace together with the clutch plate
- ☐ Allocation. Refer to the ➤ Electronic Parts Catalog (ETKA).
- ☐ Removing and Installing. Refer to ➤ [R5.2 removing and Installing", page 81](#).
- ☐ Diaphragm Spring Ends, Checking. Refer to ➤ [Fig. "Check the ends of the diaphragm spring", page 81](#).
- ☐ Checking the spring connection and rivet connections. Refer to ➤ [Fig. "Checking the spring connections and rivet connections", page 81](#).

4 - M6 Bolt: 13 Nm; M7 Bolt: 20 Nm

- ☐ Loosen and tighten in small steps and in diagonal sequence





5.2 Clutch, Removing and Installing

Removing

- Remove the transmission.
- Insert Flywheel Retainer -3067- to loosen the bolts.
- Loosen the bolt diagonally in small steps.
- Remove the pressure plate and the clutch plate.

Installing

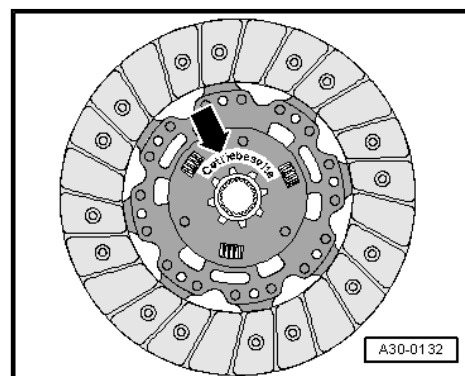
Install in reverse order of removal while noting the following:



Note

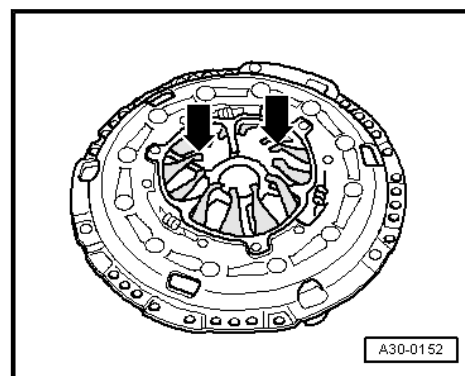
- ◆ *Allocate thrust plate and clutch plate according to the engine code. Refer to the ➔ Electronic Parts Catalog (ETKA).*
- ◆ *Check whether there are centering sleeves for the engine/transmission in the cylinder block; install if necessary.*
- ◆ *If the alignment sleeves are missing, it will be difficult to shift, there will be clutch problems and the transmission may make noises (loose rattling).*

Clutch plate installation position



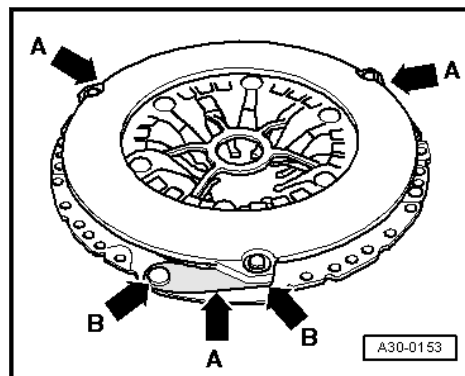
- “Getriebeseite” (transmission side) -arrow- faces the transmission.

Check the ends of the diaphragm spring



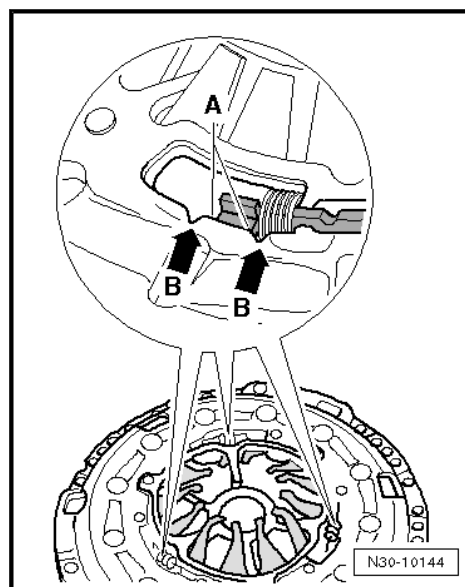
- Wear up to half the thickness of the diaphragm spring -arrows- is permitted.

Checking the spring connections and rivet connections



- Check the spring connections -arrows A- for damage and make sure the rivet connections -arrows B- are tight.

Only check the position of the adjustment mechanism with new pressure plates

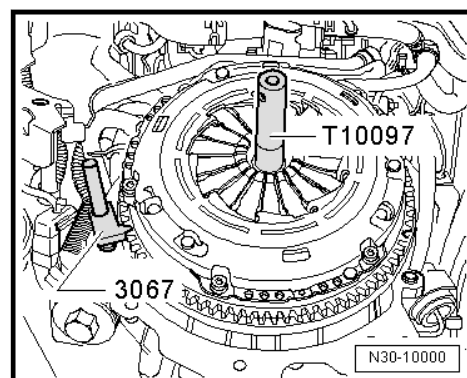


- Both edges -A- of the adjusting ring must be located between both notches -arrows B-.
- If the adjusting ring takes on a different position with new pressure plates, pressure plate and clutch plate must not be installed.
- With used clutches, the adjusting ring may take on a position outside of the notches.

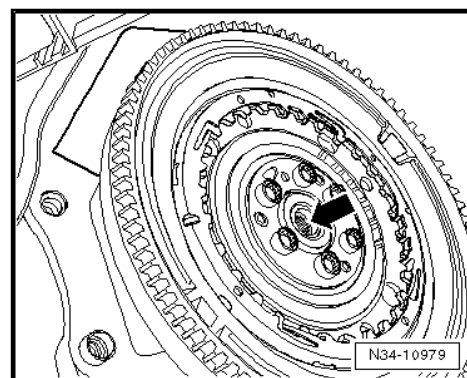


Note

- ◆ *Replace the clutch plates and pressure plates if the rivets are damaged or loose.*
 - ◆ *Replace the pressure plate and the clutch plate together.*
 - ◆ *Allocate the clutch plate and pressure plate to match the engine code. Refer to the ➔ Electronic Parts Catalog (ETKA).*
 - ◆ *To reduce odor caused by a burnt clutch, thoroughly clean the clutch housing, the flywheel and the side of the engine facing toward the transmission.*
 - ◆ *Clean the input shaft splines and the hub splines (on a used clutch plate), remove any corrosion and only apply a very thin layer of Lubricating Grease for Clutch Plate Splines -G 000 100- on the splines. Then move the clutch plate back and forth on the input shaft until the hub moves freely on the shaft. Remove any excess grease.*
 - ◆ *The pressure plates are protected from corrosion and lubricated. Only the running surfaces may be cleaned. Otherwise the service life of the clutch will be shortened considerably.*
 - ◆ *The pressure plate contact surface and the clutch plate lining must completely contact the flywheel. Install the bolts.*
- Move the Flywheel Retainer -3067- during installation.

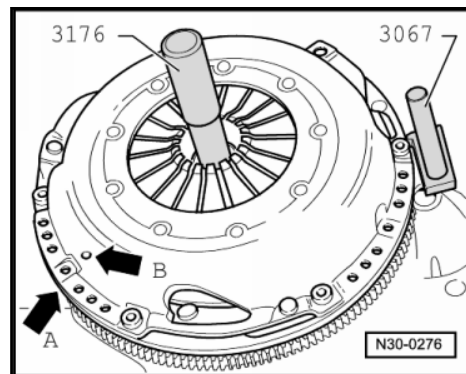


Engines having a crankshaft with a smaller diameter -arrow-, or engines having a needle bearing -arrow- in the crankshaft





Centering the clutch plate, removing and installing the pressure plate on engines with a crankshaft with a smaller diameter, or engines with a needle bearing in the crankshaft.



Note

Ignore arrows -A- and -B-.

Continuation for All

- Position the pressure plate on the centering pins.
- Install all the bolts evenly, by hand, until the bolt heads contact the pressure plate.
- Tighten the bolts in small steps and in diagonal sequence to prevent damaging the centering holes of the pressure plate and the centering pins of the dual mass flywheel ➔ [Item 4 \(page 80\)](#).
- Install the transmission.

34 – Controls, Housing

1 Shift Mechanism, Servicing

1.1 Shift Mechanism Installation Position

-Arrow A- gearshift lever movement

-Arrow B- selector lever movement

A - Shift Cable for Gearshift Movement

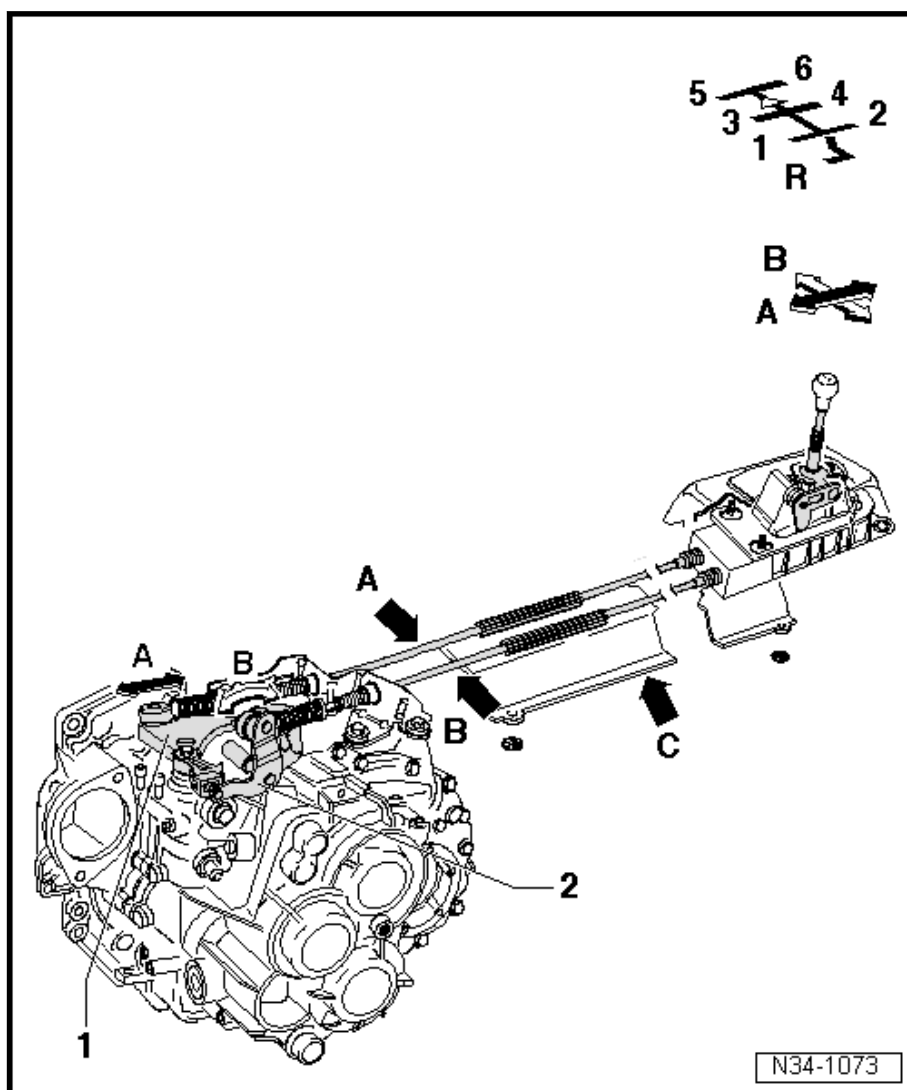
B - Selector Cable for Selection Movement

C - Heat Shield

- ❑ Remove the gearshift mechanism before removal

1 - Shift Lever

2 - Relay Lever





1.2 Overview - Shift Mechanism



Note

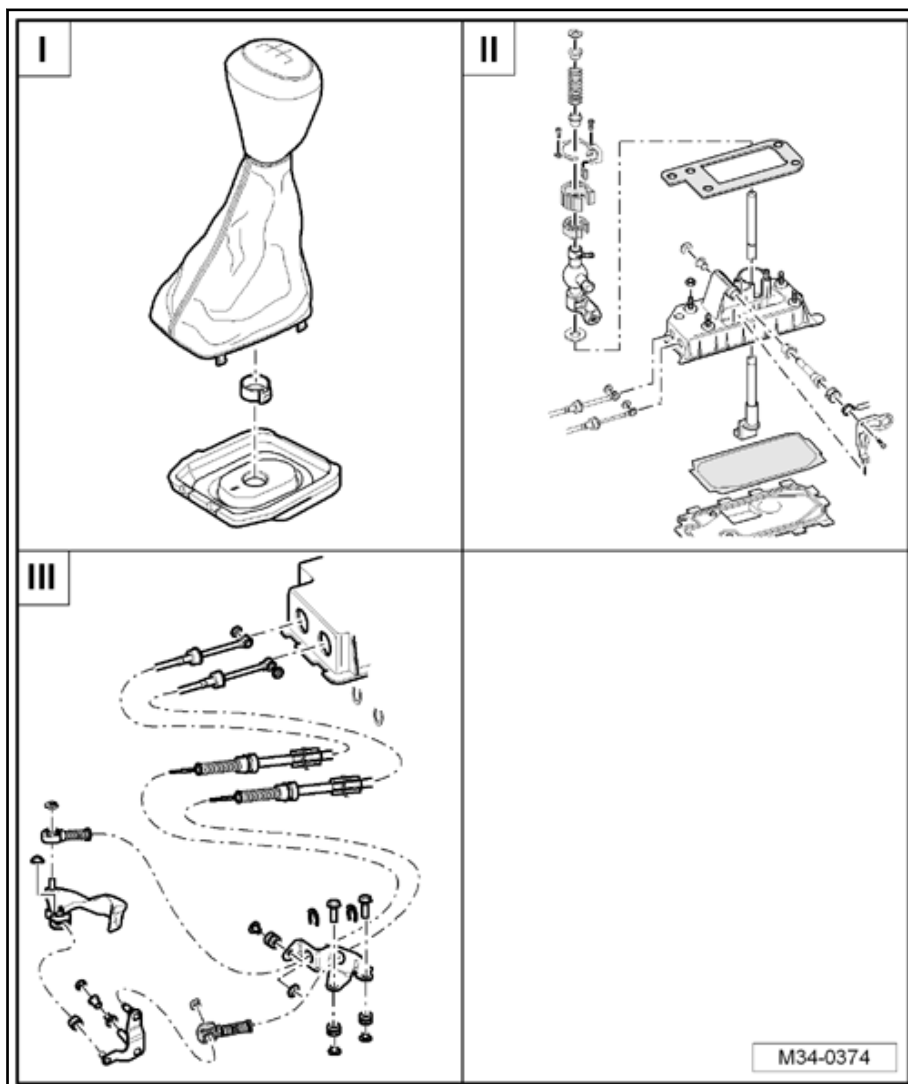
- ◆ Get the anti-theft code for the radio before disconnecting the battery.
- ◆ Disconnect the ground cable from the battery when working on the gearshift mechanism inside the engine compartment. Refer to ➤ [Electrical Equipment; Rep. Gr. 27; Battery; Battery, Disconnecting and Connecting](#).
- ◆ Read the information on what to do after connecting the battery. Refer to ➤ [Electrical System; Rep. Gr. 27; Battery; Battery, Removing and Installing](#).
- ◆ To work on shift mechanism on engine compartment, remove entire air filter housing if it is located over the shift mechanism. Refer to ➤ [Rep. Gr. 23; Diesel Direct Injection System; Overview - Air Filter or ➤ Rep. Gr. 24; Fuel Injection System; Air Filter Removing and Installing](#).
- ◆ The shift mechanism must be removed in order to replace the operating cables. Refer to ➤ [M1.9 echanism, Removing and Installing", page 113](#).
- ◆ Do not bend the operating cables.

I - Overview - Gearshift Knob and Cover. Refer to ➤ [-1.3 Gearshift Knob and Cover", page 87](#).

II - Overview - Gearshift Lever and Gearshift Housing, through 10/2006. Refer to ➤ [-1.5 Gearshift Lever and Gearshift Housing, through 10/2006", page 90](#).

II - Overview - Gearshift Lever and Gearshift Housing, from 11/2006. Refer to ➤ [-1.6 Gearshift Lever and Gearshift Housing, from 11/2006", page 93](#).

III - Overview - Operating Cables. Refer to ➤ [-1.7 Operating Cables", page 102](#)



Shift Mechanism, Removing and Installing. Refer to ➤ [M1.9 echanism, Removing and Installing", page 113](#).

Adjust the gearshift mechanism. Refer to ➤ [M1.11 Mechanism, Adjusting](#), page 121.

1.3 Overview - Gearshift Knob and Cover

1 - Badge

- ☐ Can be carefully pried off a plastic or leather gearshift knob

2 - Gearshift Knob

- ☐ With boot
- ☐ The shift knob and boot cannot be separated from each other.
- ☐ Always replace together
- ☐ Removing and Installing. Refer to ➤ [w1.4 ith Shifter Knob and Noise Insulation, Removing and Installing](#), page 87.

3 - Clamp

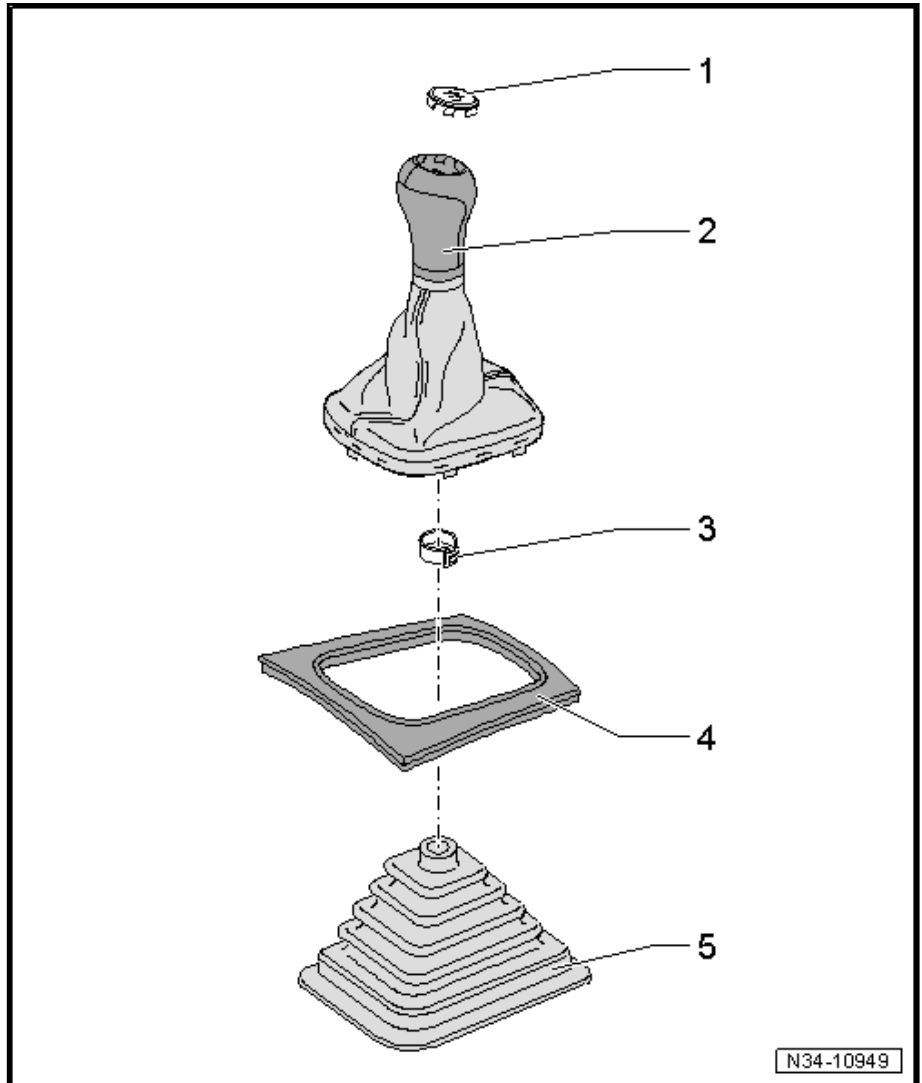
- ☐ For securing the gearshift knob to the selector lever
- ☐ Secure on the gearshift knob -Item 2- ➤ [Item 2 \(page 87\)](#) using Hose Clamp Pliers -V.A.G 1275-.
- ☐ Replace after removing

4 - Center Console Frame

- ☐ Combined in one piece with the upper center console section on some versions

5 - Noise Insulation

- ☐ not on all vehicles
- ☐ Arrow on noise insulation points in direction of travel
- ☐ Locking tab spacing varies
- ☐ Therefore can only be inserted in one position



1.4 Boot with Shifter Knob and Noise Insulation, Removing and Installing

Special tools and workshop equipment required

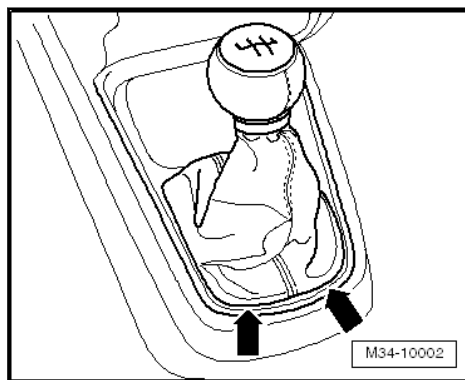


◆ Hose Clip Pliers -V.A.G 1275A-



1.4.1 Removing

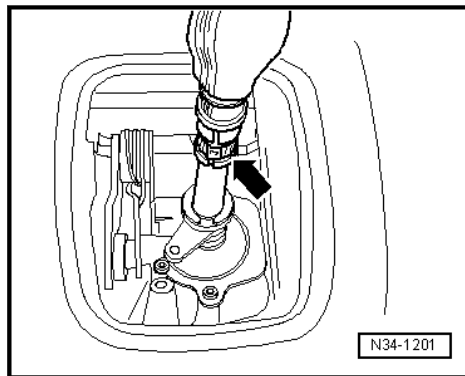
- Remove the boot with the center console frame upward from the center console or pry it out carefully -arrows-.



Note

On some versions, the boot must be pried out at the front.

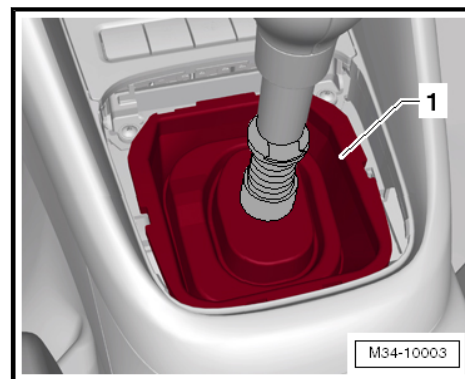
- Fold the boot with the center console frame up over the shifter knob.



- Open the clamp -arrow- and remove the shift knob and boot.

In some equipment versions, the center console frame remains in the center console.

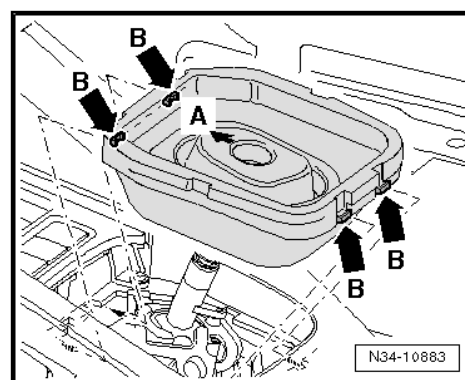
- It may be necessary to pull or pry the center console frame out carefully.
- Remove the noise insulation -1-.



1.4.2 Installing

- Install the noise insulation.

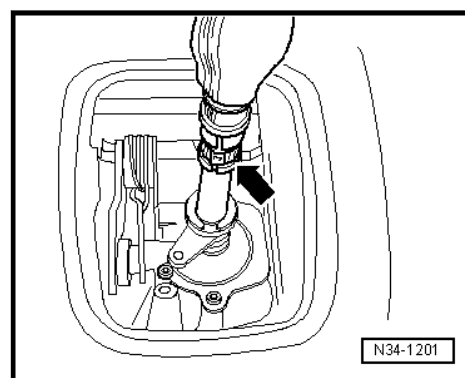
Noise Insulation Installation Position



- -Arrow A- points in direction of travel.
- The tabs -arrows B- must latch into the center console.
- Press the center console frame into the center console, if necessary.
- Then turn the inside of boot toward the outside.

Install the shift knob all the way on.

- Install the shifter knob with frame and boot and press the new clamp -arrow- together.



- Press the boot with the frame into the center console or the boot into the frame.



1.5 Overview - Gearshift Lever and Gearshift Housing, through 10/2006



Note

Lubricate bearing areas and slide surfaces with Grease -G 000 450 02-.



1 - Lock Washer

- ☐ Removing and Installing. Refer to ➤ Fig. [“Removing and installing the lock washer”](#), page 92 .

2 - Bushing

3 - Pressure Spring

4 - Bushing

5 - Torx Bolt, 5 Nm

6 - Cover

7 - Insulation

8 - Insulation

9 - Bearing Shell

10 - Shift Lever Guide

11 - Washer

12 - Seal

- ☐ Between the selector housing and the under-body
- ☐ Self-adhesive
- ☐ Affix to the selector housing

13 - Gearshift Lever

14 - Shifter Housing

15 - Bearing Bushing

16 - Mounting Pin

17 - Guide Bushing

18 - Pressure Spring

- ☐ Installing. Refer to ➤ Fig. [“Pressure Spring, Installing”](#), page 93 .

19 - Selector Bracket

20 - Torx Bolt, 5 Nm

21 - Seal

- ☐ Replace after removing

22 - Base Plate

- ☐ Bend the tabs in order to remove
- ☐ Replace after removing

23 - Selector Cable

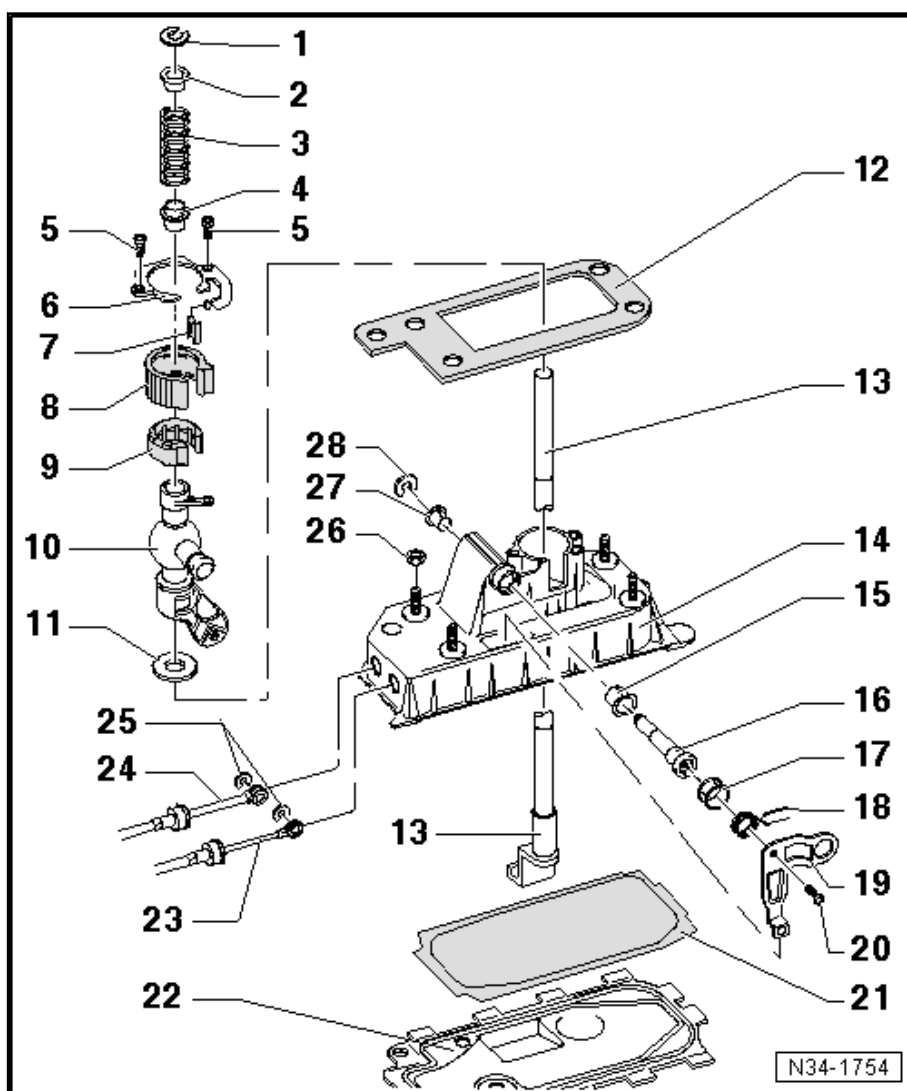
- ☐ To the selector bracket
- ☐ Removing and installing. Refer to ➤ Fig. [“Selector Cable and Shift Cable, Removing and Installing”](#), page 92 .

24 - Shift Cable

- ☐ Removing and Installing at Shift Lever Guide. Refer to ➤ Fig. [“Selector Cable and Shift Cable, Removing and Installing”](#), page 92 .

25 - Lock Washer

- ☐ Replace after removing





26 - Nut

- ☐ M6: 8 Nm
- ☐ M8: 25 Nm
- ☐ Quantity: 4

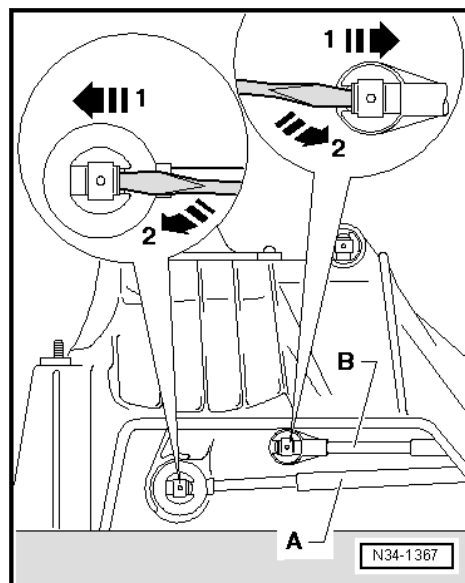
27 - Bearing Bushing

- ☐ Only fits in one position

28 - Lock Washer

- ☐ Replace after removing

Selector Cable and Shift Cable, Removing and Installing

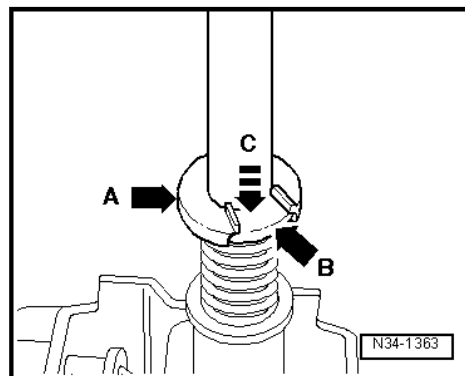


- Remove the lock washer from the shift cable -A- and the selector cable -B-.

To do so, lift the tab using a screwdriver -arrow 1- and remove the lock washer -arrow 2-.

- Remove the shift cable -A- from the shift lever mount.
- Remove the selector cable -B- from the selector bracket mount.

Removing and installing the lock washer



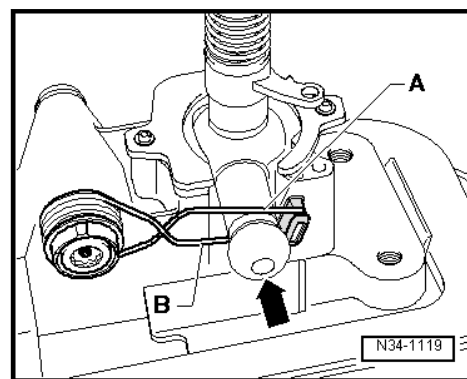
- To remove and install the lock washer -arrow A-, use a screwdriver to push the bushing -arrow B- all the way in the -direction of the arrow C- and remove the lock washer.



Note

- ◆ *Do not tilt the bushing when pushing it down.*
- ◆ *The slot in the lever for the circlip must be visible.*
- ◆ *Carefully release the tension on the spring.*

Pressure Spring, Installing



- Insert the pressure spring so that the brace -A- contacts the top of the pin -arrow-.
- Then pull the brace -B- downward so that it reaches the bottom of the pin -arrow-.

1.6 Overview - Gearshift Lever and Gearshift Housing, from 11/2006



Note

- ◆ *Lubricate the bearing areas and the sliding surfaces.*
- ◆ *Refer to the ⇒ Electronic Parts Catalog (ETKA) for the grease allocation.*
- ◆ *Shift Mechanism, Disassembling and Assembling. Refer to ⇒ [M1.6.1 echanism, Disassembling and Assembling](#), page 95.*



1 - Base Plate

- ☐ Bend the tabs in order to remove
- ☐ Replace after removing

2 - Seal

- ☐ Replace after removing

3 - Gearshift Lever

- ☐ Can be removed and installed with the shift lever guide ➔ [Item 15](#) (page 94) installed

4 - Washer

- ☐ Slide onto the shift lever until it stops -arrow-

5 - Lock Washer

- ☐ Be careful not to damage the cables when removing them
- ☐ Replace after removing

6 - Selector Cable

- ☐ Pry out of the selector bracket
- ☐ Press onto selector bracket inside the selector mechanism
- ☐ Installation position. Refer to ➔ [M1.1 echanism Installation Position](#)", page 85 .

7 - Bushing

8 - Shift Cable

- ☐ Pry out of the selector lever guide
- ☐ Press onto selector lever guide inside the shift mechanism
- ☐ Installation position. Refer to ➔ [M1.1 echanism Installation Position](#)", page 85 .

9 - Insulation

10 - Bearing Shell

- ☐ Will get damaged when being removed
- ☐ Replace after removing

11 - Bushing

12 - Lock Washer

- ☐ Removing and Installing. Refer to ➔ [Fig. "Removing and installing the lock washer"](#), page 92 .

13 - Pressure Spring

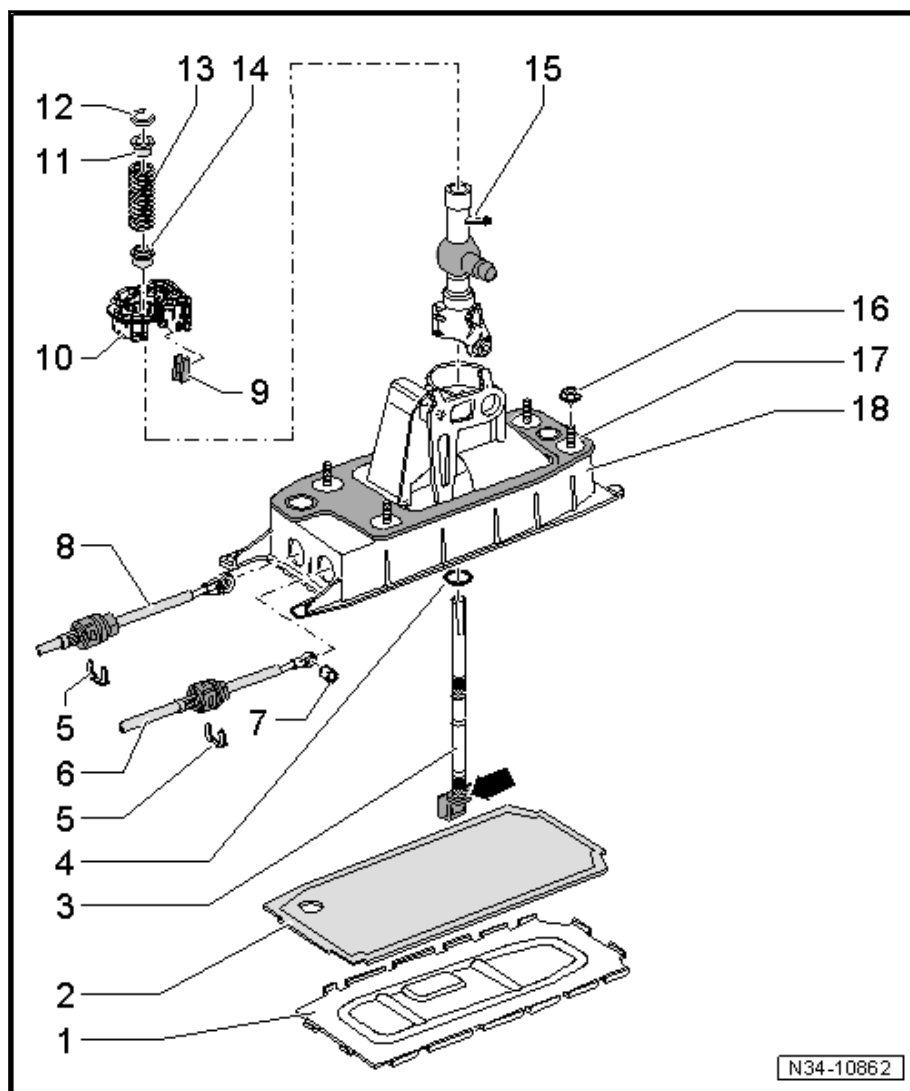
- ☐ Removing and Installing. Refer to ➔ [Fig. "Removing and installing the lock washer"](#), page 92 .

14 - Bushing

15 - Shift Lever Guide

16 - Nut

- ☐ M6: 8 Nm
- ☐ M8: 25 Nm
- ☐ Quantity: 4





17 - Seal

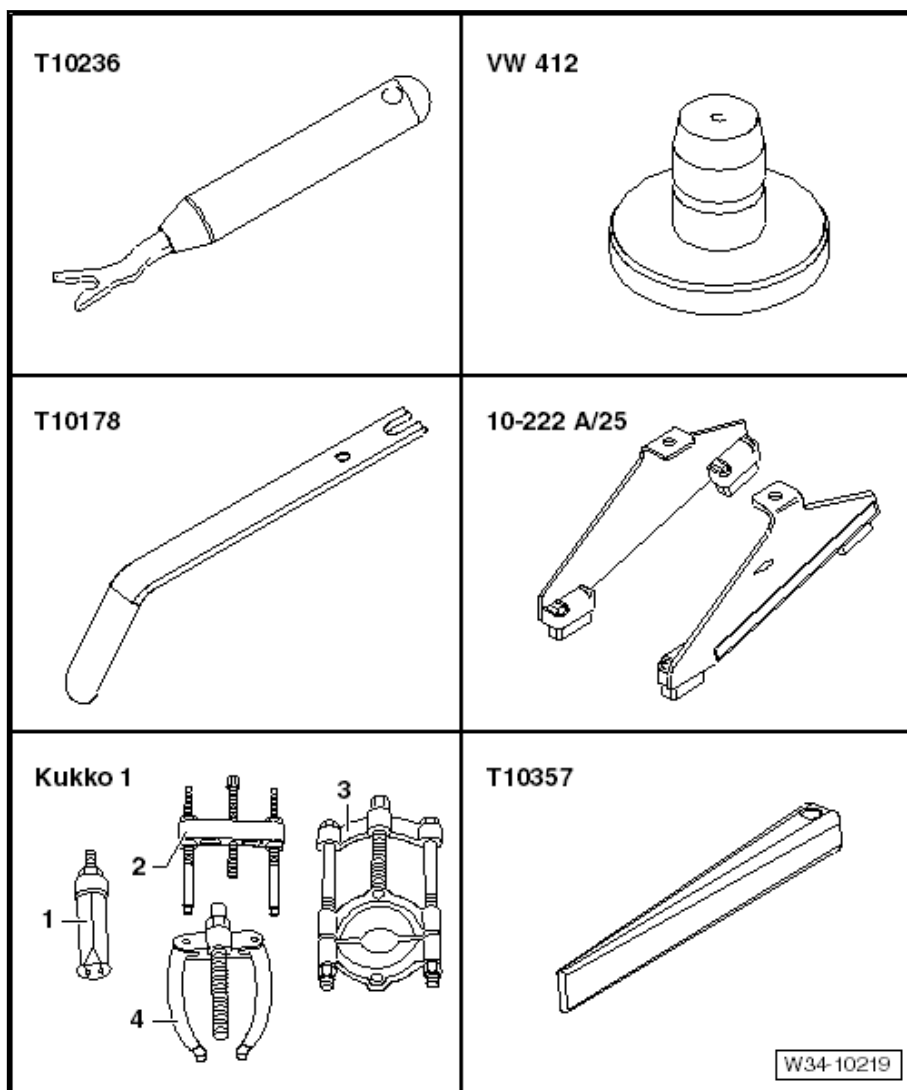
- ☐ Between the selector housing and the underbody
- ☐ Self-adhesive
- ☐ Affix to the selector housing

18 - Shifter Housing

- ☐ with pressure spring and selector bracket
- ☐ Spring and selector bracket cannot be removed

1.6.1 Shift Mechanism, Disassembling and Assembling

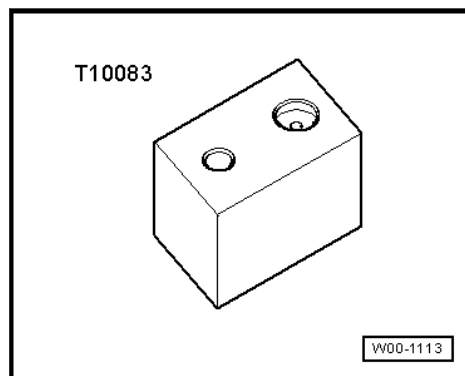
Special tools and workshop equipment required



- ◆ Window Release Tool -T10236-
- ◆ Press Piece - Multiple Use -VW 412-
- ◆ Over-Center Spring Assembly Tool -T10178- or flat iron, 200 x 25 x 5 mm
- ◆ Engine Support Bridge - Engine Support 25 -10 - 222 A /25- or flat iron, 350 X 30 X 5 mm
- ◆ -4- Counter Support, for example -VAS 251625-



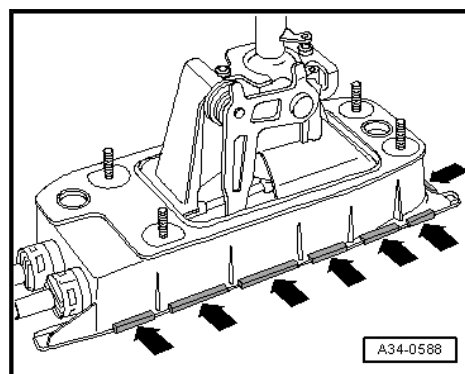
- ◆ Wedge -T10357-
- ◆ Press Piece - Block -T10083-



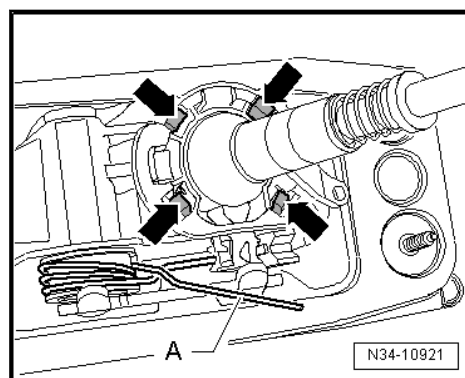
- ◆ Determine the shift mechanism grease using the ⇒ Electronic Parts Catalog (ETKA).

Disassembling

- Remove the selector mechanism. Refer to ⇒ [M1.9 Mechanism, Removing and Installing](#), page 113 .
- Bend up the gearshift mechanism base plate straps -arrows- with a screwdriver and remove the base plate. Only the straps on the left side of the base plate are shown in the illustration.



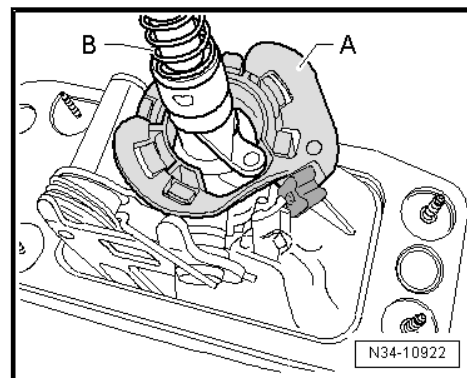
- Remove the seal from the gearshift housing.
- Remove shift cable and selector cable from selector housing. Refer to ⇒ [1.7 Operating Cables](#), page 102 .
- Raise upper side of spring -A- over selector bracket tab.



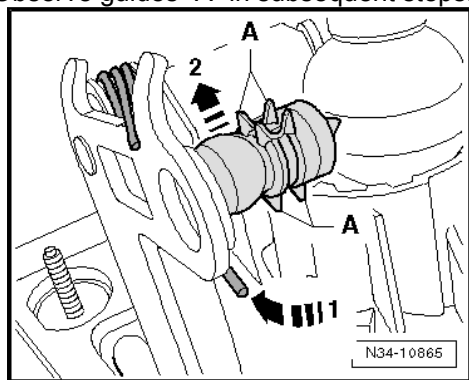
- Using a screwdriver, press bearing shell tabs -arrows- in direction of selector lever guide bearing; break off the tabs if necessary.



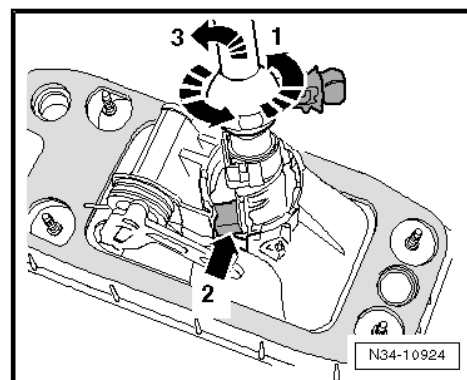
- Pry out bearing shell -A- with shift lever guide -B- from selector housing.



- Then press bearing shell off selector lever guide bearing and remove.
- Observe guides -A- in subsequent steps.



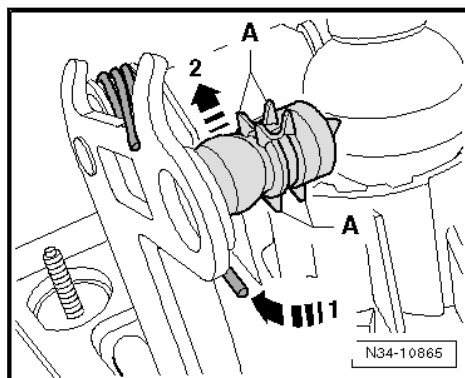
- They must not break off.
- Raise the lower spring end -arrow 1- onto shoulder on selector bracket until it stops.
- Now raise selector lever guide up until it stops and remove ball studs from selector bracket -arrow 2-.
- Turn the selector lever in the -direction of the arrow 1-.



- The pins -arrow 2- must be in the selector housing opening.
- Move the selector lever guide and the selector lever in the -direction of arrow 3-.



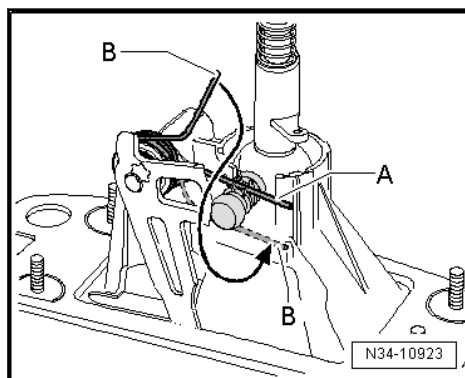
Assembling



Caution

The lower side of the spring -arrow 1- can spring down uncontrolled from the selector bracket shoulder during subsequent handling.

- Carefully press it down from the selector bracket shoulder.
The spring sides then twist “diagonally” with a loud noise.
- Release the tension on the spring ends -A- and -B- by turning them both to the right.



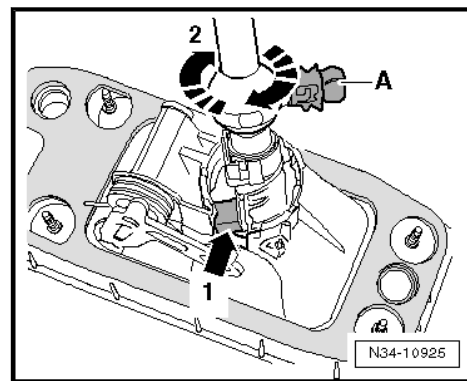
- The spring ends -A- and -B- must point in the opposite direction.



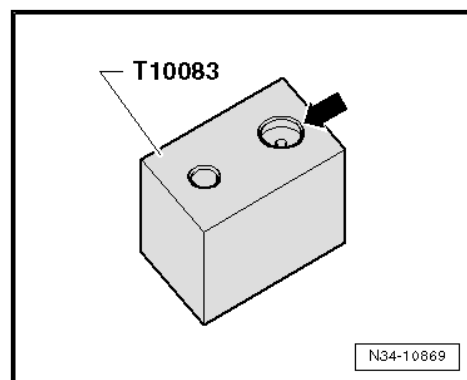
Note

The selector shaft must be removed in order to insert the gearshift housing with the selector shaft guide into the Pressing Support.

- Install the shift lever guide into the gearshift housing.



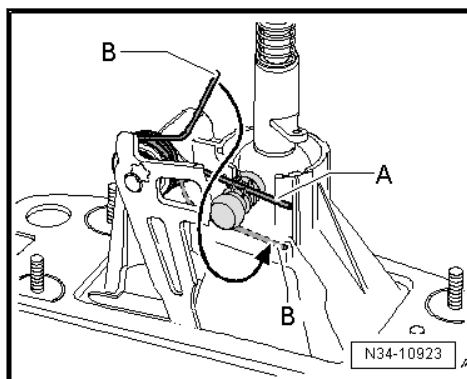
- The pins -arrow 1- are still located in the selector housing opening.
- Turn the selector lever guide in the -direction of arrow 2- until the ball head pin -A- is above the opening in the selector housing.
- Install the selector housing with selector lever guide in the larger depression -arrow- in the Press Piece - Block -T10083-.



Note

The selector shaft must be removed in order to insert the gear-shift housing with the selector shaft guide into the Pressing Support.

- The selector lever guide must project out of selector housing as far as stop.

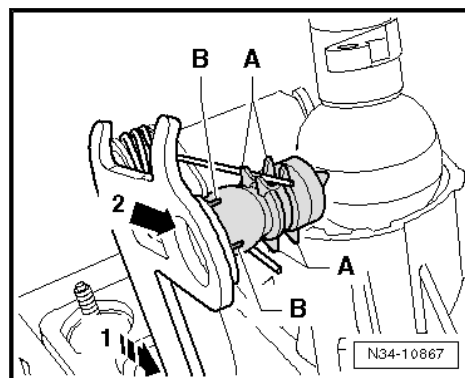




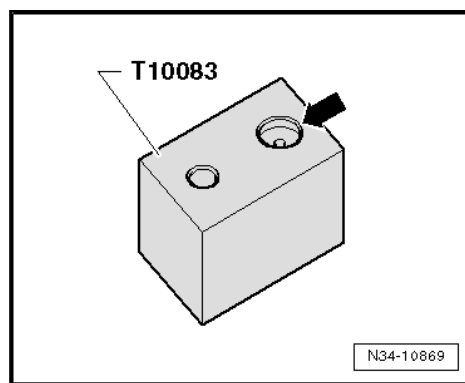
Note

The selector bracket is only partially shown to provide a better illustration.

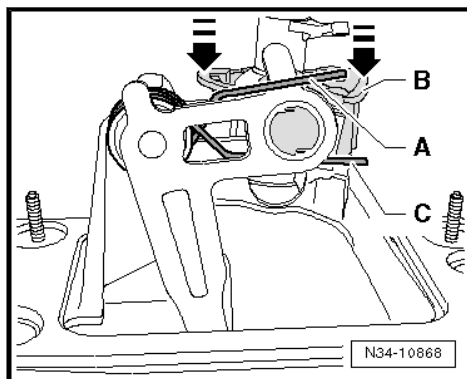
- Insert the spring side -A- from above into the guide.
- Pull the spring end -B- downward and insert it near the guide (in direction of ball head).
- Carefully remove the selector housing with the selector lever guide from the Press Piece - Block -T10083-.
- Move selector bracket back as far as stop (opposite mounting holes for gearshift and selector cable) -arrow 1-.



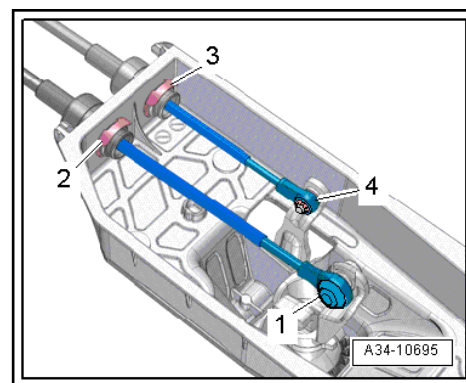
- Lubricate the ball stud.
- Press the ball stud into the selector bracket -arrow 2-.
- The guides -A- and the tabs -B- must not be damaged.
- Install the selector housing with selector lever guide in the larger depression -arrow- in the Press Piece - Block -T10083-.



- The selector lever guide must project out of selector housing as far as stop.

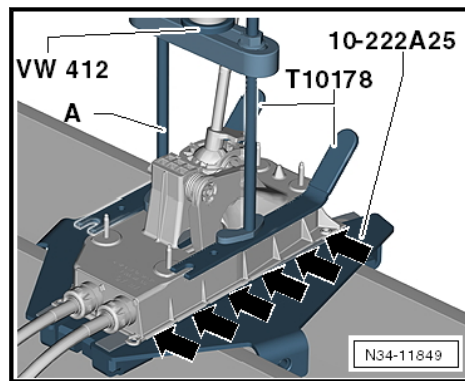


- Raise the upper spring end -A- over selector bracket pins.
- Use a new bearing shell -B-.
- Lubricate the bearing shell and selector lever guide bearing.
- Press the bearing shell onto selector lever guide bearing until it stops.
- Remove the selector housing from the Press Piece - Block -T10083-.
- Insert the lower spring end -C- into the guide.
- Raise top on the spring end -A- over selector bracket pins into the guide.
- Press the bearing shell into the selector housing -arrows-.
- All four retaining tabs must engage.
- If equipped, install the shift lever in the shift housing.
- Secure the shift cable and selector cable on the shift housing with lock washers -2- and -3-.



- Install the shift cable -1- on the gearshift lever and selector cable -4- on the selector lever inside the gearshift housing.

Base Plate, Mounting on Shifter Housing



- Install a new seal ➔ [Item 2 \(page 94\)](#) on the base plate.



Caution

There is a danger of causing damage to the selector housing and base plate.

Tension the gearshift housing only slightly.

- Bend the tabs -arrow- back over all around the base plate to secure it (only the tabs on the left side of the base plate are shown).



Note

- ♦ *If only one Over-Center Spring Assembly Tool -T10178- is available, instead of a second Over-Center Spring Assembly Tool -T10178- the Toothed Belt Tensioner -T10020- can be used.*
- ♦ *A 200 x 25 x 5 mm flat iron can be used in place of an Over-Center Spring Assembly Tool -T10178-.*
- ♦ *A 350 X 30 X 5 mm flat iron can be used in place of an Engine Support Bridge - Engine Support 25 -10 - 222 A /25-.*
- The tabs can be bent back over using the Wedge -T10357-.
- A- = Puller - Counterstay, for example -Kukko 22/4-
- Glue a new seal on the gearshift housing.
- Install the selector mechanism. Refer to ➔ [M1.9 echanism, Removing and Installing", page 113](#) .

1.7 Overview - Operating Cables



Note

Lubricate the bearing areas and the sliding surfaces. Refer to the ➔ [Electronic Parts Catalog \(ETKA\)](#) for the grease allocation.



1 - Shift Cable

- ☐ Attach to the cable retainer -Item 18- ➤ [Item 18 \(page 104\)](#) .
- ☐ Installation position. Refer to ➤ [M1.1 echanism Installation Position", page 85](#) .
- ☐ From 11/2006, the retainer on the shift lever inside the shift mechanism -Item 8- ➤ [Item 8 \(page 94\)](#) was changed

2 - Selector Cable

- ☐ Attach to the cable retainer-Item 11- ➤ [Item 11 \(page 103\)](#) .
- ☐ Installation position. Refer to ➤ [M1.1 echanism Installation Position", page 85](#) .
- ☐ From 11/2006, the retainer on the selector bracket inside the shift mechanism -Item 6- ➤ [Item 6 \(page 94\)](#) was changed

3 - Lock Washer

- ☐ Replace after removing
- ☐ Discontinued on shift mechanisms from 11/2006. Refer to ➤ [-1.6 Gearshift Lever and Gearshift Housing, from 11/2006", page 93](#) .

4 - Lock Washer

- ☐ Be careful not to damage the cables when removing them
- ☐ Replace after removing

5 - Shifter Housing

6 - Hex Bolt, 20 Nm

- ☐ For the cable bracket
- ☐ Quantity: 2

7 - Cable Bracket

- ☐ Can be made of plastic or metal

8 - Grommet

- ☐ Cable bracket mounting to transmission

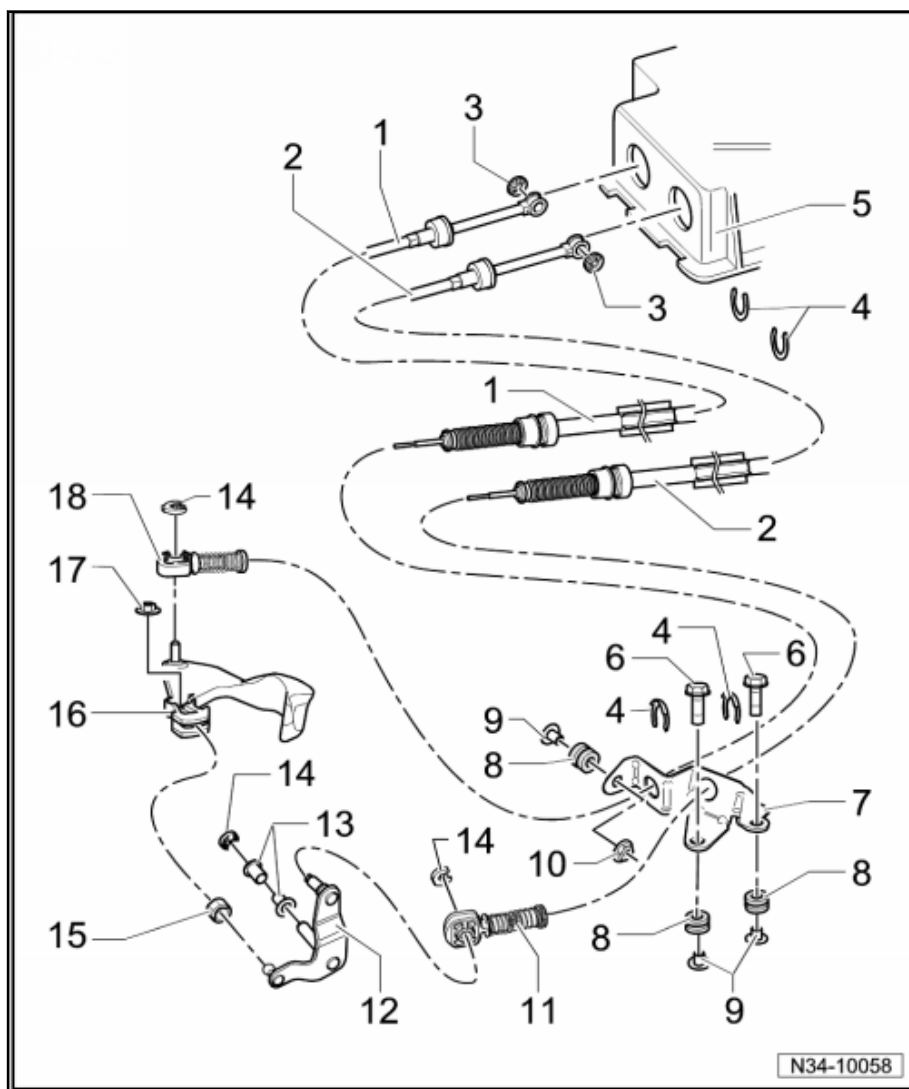
9 - Spacer

10 - Nut, 20 Nm

- ☐ For the cable bracket

11 - Cable Retainer

- ☐ For attaching the selector cable to the relay lever
- ☐ After installing, adjust the shift mechanism. Refer to ➤ [M1.11 echanism, Adjusting", page 121](#) .





- ☐ Do not interchange, cable locking mechanisms for selector cable on linkage lever and for shift cable on transmission shift lever are different. Refer to ➤ [Fig. ““Cable retainer allocation””, page 104](#) .
- ☐ From 05/2007 installed in with the plastic relay lever. Refer to ➤ [R1.8 elay Lever”, page 108](#) .
- ☐ Removing from Plastic Relay Lever. Refer to ➤ [R1.8 elay Lever”, page 108](#) .
- ☐ Installing on Plastic Relay Lever. Refer to ➤ [R1.8 elay Lever”, page 108](#) .
- ☐ Allocation. Refer to ➤ [Fig. ““Cable retainer allocation””, page 104](#) .

12 - Relay Lever

- ☐ Installation position. Refer to ➤ [Fig. ““Shift Lever/Relay Lever Installation Position””, page 106](#) .
- ☐ After installing, adjust the shift mechanism. Refer to ➤ [M1.11 echanism, Adjusting”, page 121](#) .
- ☐ Can be made of plastic or metal
- ☐ The metal relay lever is placed in the bushings ➤ [Item 13 \(page 104\)](#) and secured with a lock washer ➤ [Item 14 \(page 104\)](#) .
- ☐ From 05/2007 plastic relay lever
- ☐ Plastic Relay Lever, Removing and Installing with Cable Retainer. Refer to ➤ [R1.8 elay Lever”, page 108](#) .
- ☐ The bearing bushings and lock washer are not needed with the plastic relay lever

13 - Bearing Bushing

- ☐ Discontinued on the plastic relay lever

14 - Lock Washer

- ☐ Replace after removing
- ☐ Discontinued on the plastic relay lever

15 - Slide Block

16 - Shift Lever

- ☐ With a balance weight
- ☐ Insert so that master spline aligns with shift rod
- ☐ After installing, adjust the shift mechanism. Refer to ➤ [M1.11 echanism, Adjusting”, page 121](#) .
- ☐ Installation position. Refer to ➤ [Fig. ““Shift Lever/Relay Lever Installation Position””, page 106](#) .
- ☐ From 06/2006 the cable retainer mounting pin has a smaller diameter. Refer to ➤ [Fig. ““As of 06/2006, smaller bolt diameter for the shift cable retainer.””, page 105](#)

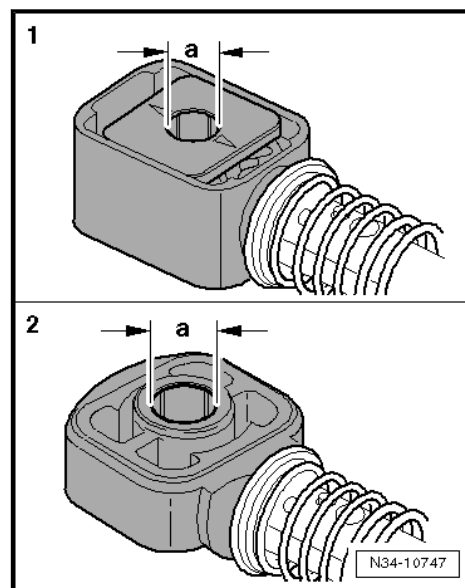
17 - Hex Nut, 23 Nm

- ☐ Self-locking
- ☐ Replace after removing

18 - Cable Retainer

- ☐ For attaching the shift cable to the selector lever
- ☐ After installing, adjust the shift mechanism. Refer to ➤ [M1.11 echanism, Adjusting”, page 121](#) .
- ☐ Do not interchange, cable locking mechanisms for selector cable on linkage lever and for shift cable on transmission shift lever are different. Refer to ➤ [Fig. ““Cable retainer allocation””, page 104](#) .

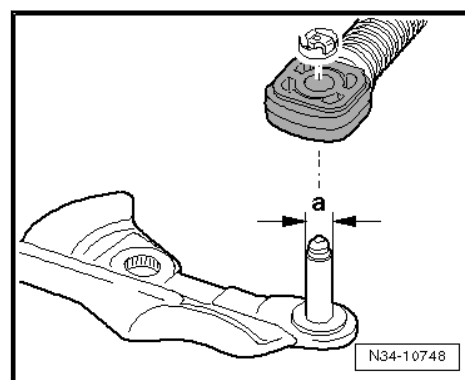
Cable retainer allocation



The holes in the cable retainers have different diameters.

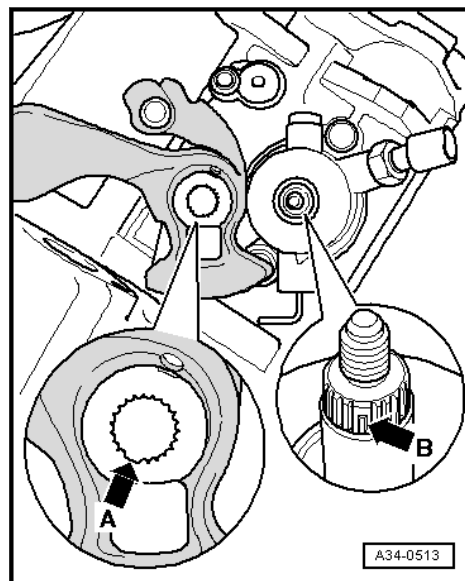
Cable retainer for:	Dimension "a"
1. - gearshift cable to gearshift lever from 06/2006	8.5 mm
2. - gearshift cable to gearshift lever to 05/2006	10 mm
2. - selector cable to metal relay lever	8 mm
2. - selector cable to plastic relay lever. Refer to ⇒ R1.8 relay Lever , page 108 .	10 mm

As of 06/2006, smaller bolt diameter for the shift cable retainer.



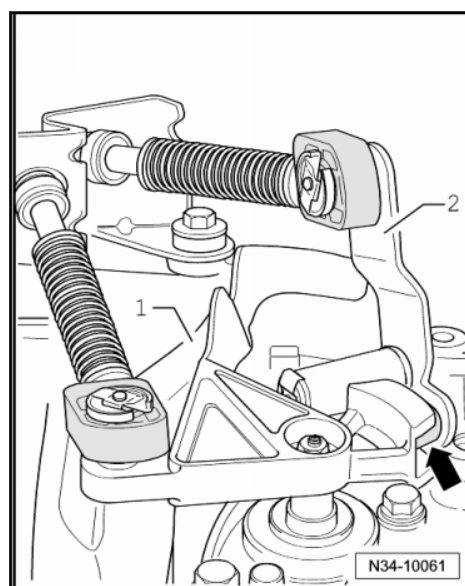
Mounting pin for gearshift cable retainer	Dimension "a"
through 05/2006	10 mm
from 06/2006	8.5 mm

Shift Lever, Installing



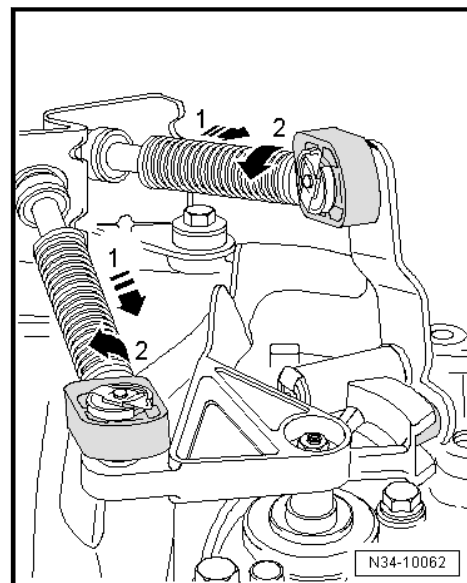
- When positioning the shift lever, make sure the gap -arrow A- is placed over the missing gearshift shaft teeth -arrow B-.

Shift Lever/Relay Lever Installation Position

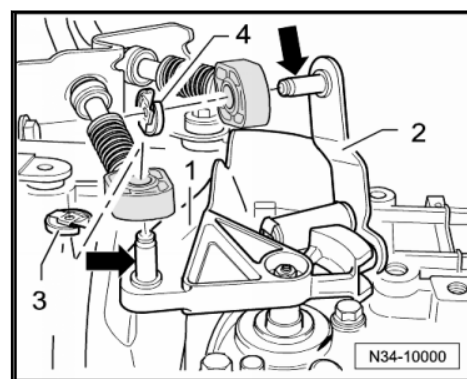


- 1 - Selector Lever with Balance Weight
- 2 - The relay lever engages into the slide block -arrow- in the shift lever guide rail.

Cable Retainer, Replacing



- Pull the safety mechanism on the cable retainer forward from the shift cable and selector cable until it stops -1 arrows- and then lock it to the left -2 arrows-.
- Remove the shift cable lock washer -3- from the gearshift lever -1-.



- Remove the shift cable from the pins -arrow-.

Metal Relay Lever

- Remove the selector cable lock washer -4- from the relay lever -2-.
- Remove the selector cable from the pin.

Plastic Relay Lever

- Remove the relay lever with the cable retainer. Refer to ➤ [R1.8 elay Lever”, page 108](#) .
- Pry the cable retainer out. Refer to ➤ [Fig. ““Selector Cable Retainer, Removing from Plastic Relay Lever””, page 111](#) .

Continuation for All Shift Mechanisms

- Apply a small amount of grease on the pins -arrows- on the shift lever -1- and, if necessary, on the relay lever -2-.
- Refer to the ➤ Electronic Parts Catalog (ETKA) for the grease allocation.
- Replace the lock washer -3- and the lock washer -4- on the metal relay lever each time they are removed.



- Secure the shift cable with the lock washer -3-, and secure the selector cable with the lock washer -4- on the metal relay lever.



Note

If a plastic relay lever is installed, it must be installed together with the cable retainer. Refer to ➤ [R1.8 relay Lever](#), page 108.

- Adjust the gearshift mechanism. Refer to ➤ [M1.11 mechanism, Adjusting](#), page 121.

1.8 Plastic Relay Lever

A plastic relay lever is installed from 05/2007. Two versions may be installed.

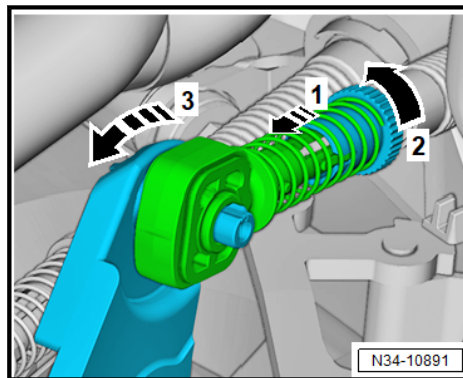
- ◆ Relay lever with tab or
- ◆ Relay lever with clip

Note the following when removing and installing:

- To remove the relay lever, the cable retainer must be separated from the selector cable.

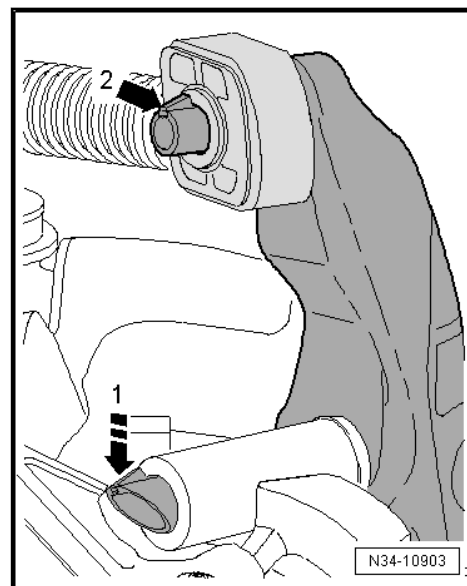
This prevents damage to the selector cable.

- Pull the securing mechanism all the way forward in -direction of the arrow 1- and then unlock to the left in -direction of the arrow 2-.



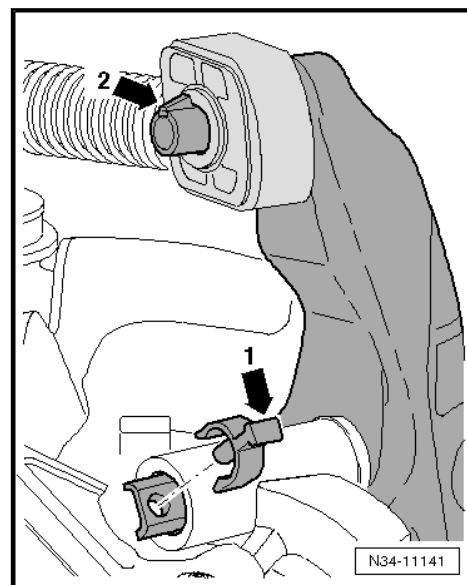
- Press the relay lever forward (-direction of the arrow 3-).

Relay lever with tab -arrow 1-



- Press the tab -arrow 1- down as far as the stop and remove the relay lever together with the cable retainer. Move it in the operating direction when doing so.

Relay lever with clip -arrow 1-



- Remove the clip -arrow 1- and the relay lever together with the cable retainer.

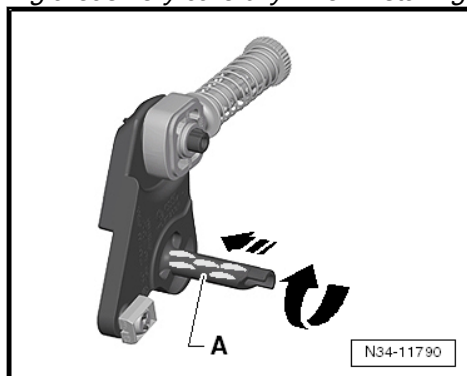
Continuation for All

- The cable retainer must be behind the catch -arrow 2-.
- The cable retainer may only be removed with the relay lever removed. Refer to ➤ Fig. [““Selector Cable Retainer, Removing from Plastic Relay Lever””, page 111](#) .

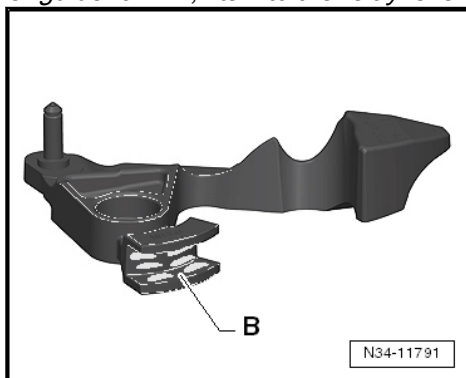


Note

Lubricate the following areas very carefully when installing:

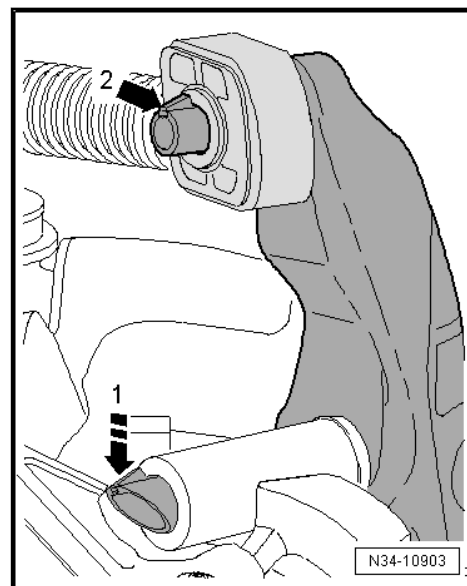


- ◆ *Relay lever shaft -A- -arrows-.*
- ◆ *Gearshift lever guide rail -B-, fits into the relay lever.*



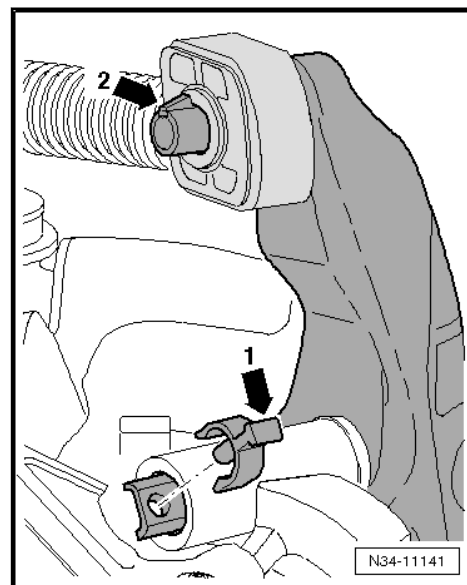
- ◆ *The relay lever and gearshift lever shown may differ from the original part.*
- ◆ *Refer to the ⇒ Electronic Parts Catalog (ETKA) for the grease allocation.*
- Press the cable retainer onto the relay lever. Refer to ⇒ [Fig. “Installing the cable retainer”](#), page 112 .
- Insert the relay lever together with the cable retainer until it stops.

Relay lever with tab -arrow 1-



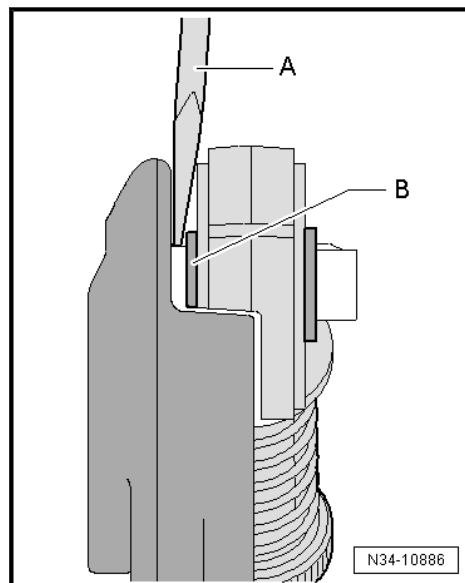
- The catch -arrow 1- secures the relay lever.
- Make sure it engages securely.
- The cable retainer must be behind the catch -arrow 2-.

Relay lever with clip -arrow 1-



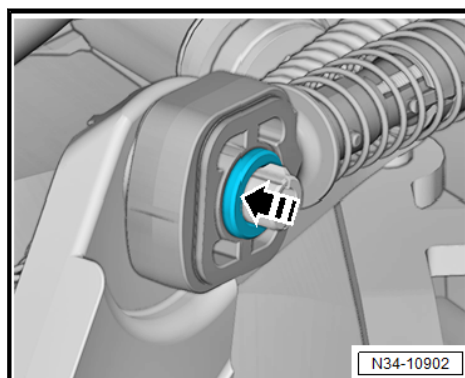
- The clip -arrow 1- secures the relay lever.
- Make sure the clips locks securely.
- The cable retainer must be behind the catch -arrow 2-.

Selector Cable Retainer, Removing from Plastic Relay Lever

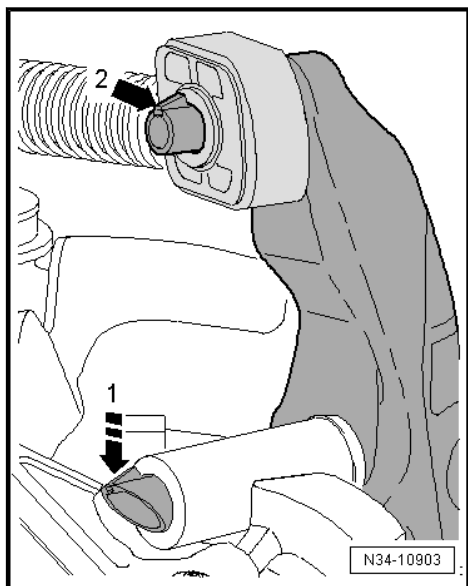


- The relay lever is removed.
- Insert a flat-blade screwdriver -A- between the bushing -B- and the relay lever.

Installing the cable retainer



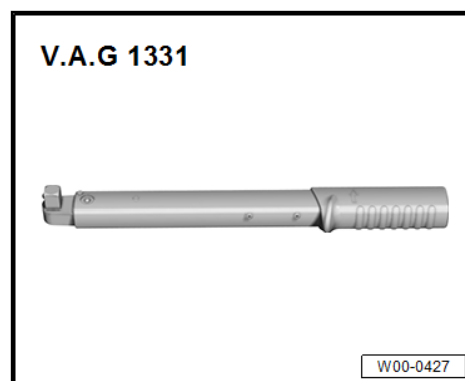
- The relay lever is removed.
- The cable retainer may only be installed at the bushing -arrow-.
- The cable retainer must move freely on the relay lever.
- It must be behind the tab -arrow 2-.



1.9 Shift Mechanism, Removing and Installing

Special tools and workshop equipment required

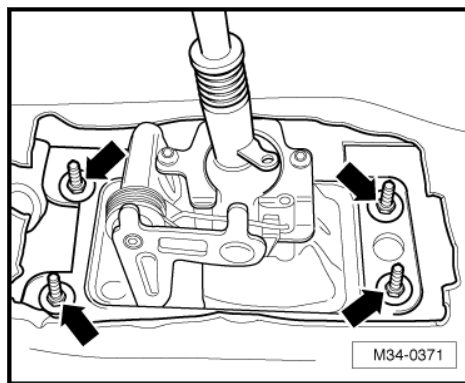
- ◆ Torque Wrench 1331 5-50Nm -V.A.G 1331-



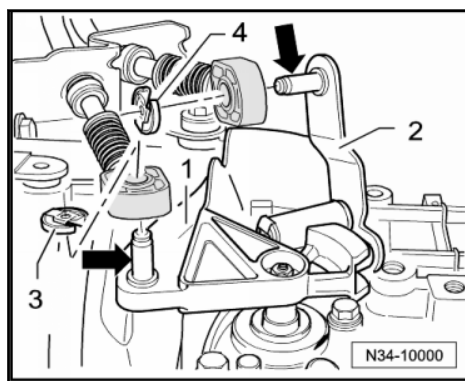
- ◆ Refer to the ⇒ Electronic Parts Catalog (ETKA) for the grease allocation.

1.9.1 Removing

- First check whether a coded radio is installed. If this is the case obtain the anti-theft code.
- Disconnect the battery ground cable. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Disconnecting and Connecting.
- Remove the boot with the shifter knob and noise insulation. Refer to ⇒ [w1.4 ith Shifter Knob and Noise Insulation, Removing and Installing](#), page 87 .
- Remove the center console and the center console securing bracket. Refer to ⇒ Body Interior; Rep. Gr. 68; Storage Compartments, Covers and Trim.
- Remove the nuts -arrows-.



- Remove entire air filter housing if it is located over the selector mechanism. Refer to ➤ Rep. Gr. 23; Diesel Direct Injection System; Overview - Air Filter or ➤ Rep. Gr. 24; Fuel Injection; Air Filter, Removing and Installing.
- Remove the shift cable lock washer -3- from the gearshift lever -1-.



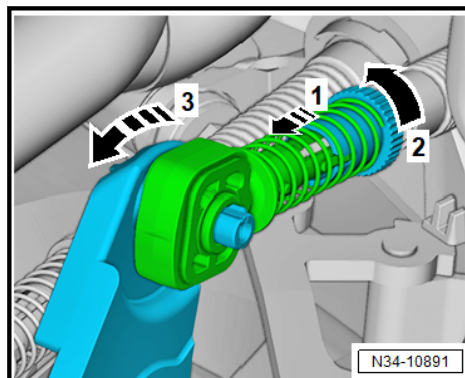
- Remove the shift cable from the pins -arrow-.

Metal Relay Lever

- Remove the selector cable lock washer -4- from the relay lever -2-.
- Remove the selector cable from the pins -arrow-.

Plastic Relay Lever

Cable Retainer, Separating from Selector Cable



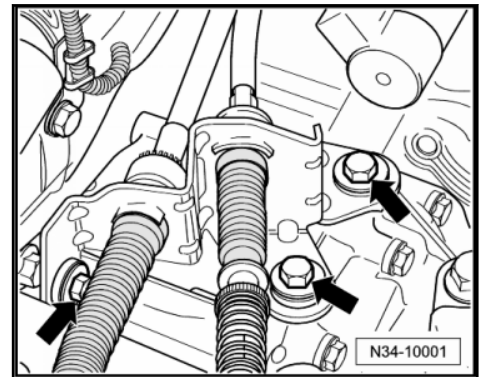
- To avoid damage to the selector cable, the cable retainer must be disconnected from the selector lever before removal.



- Pull the securing mechanism all the way forward in -direction of the arrow 1- and then unlock to the left in -direction of the arrow 2-.
- Press the relay lever forward (-direction of the arrow 3-).
- Remove the relay lever with the cable retainer. Refer to ➤ [R1.8 relay Lever", page 108](#).

Continuation for All Shift Mechanisms

- Remove the cable bracket from the transmission -arrows-.



- Remove the noise insulation. Refer to ➤ Body Exterior; Rep. Gr. 50; Noise Insulation; Overview - Noise Insulation.
- Remove the tunnel braces. Refer to ➤ Body Exterior; Rep. Gr. 50; Tunnel Braces.

FWD Vehicles



Caution

Risk of damaging the decoupling element.

- ◆ *Do not bend the decoupling element more than 10°.*
- ◆ *Do not place any load on the decoupling element.*
- ◆ *Do not damage the wire mesh on the decoupling element.*

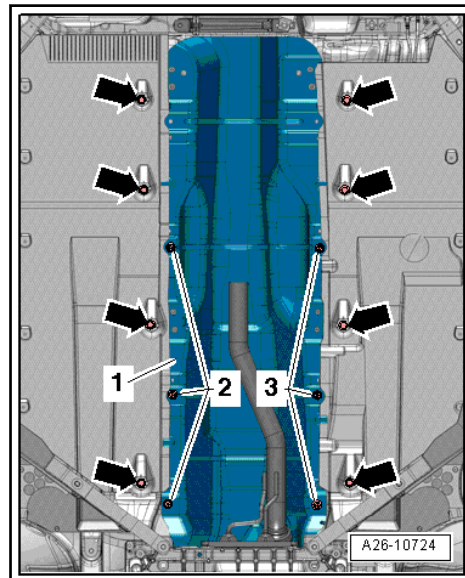
- Separate the front exhaust system front section at the double clamp and remove it from the subframe. Refer to ➤ Rep. Gr. 26; Exhaust System or ➤ Rep. Gr. 26; Exhaust System Components.
- Disengage exhaust system rear section and secure to the body using for example using a wire. Remove the exhaust system rear section, if necessary.

AWD Vehicles

- Remove the rear muffler from the retaining straps and remove the rear section of the exhaust system.
- Remove the exhaust pipe. Refer to ➤ Rep. Gr. 26; Exhaust System or ➤ Rep. Gr. 26; Exhaust System Components.
- Remove the heat shield underneath the driveshaft.
- Remove the driveshaft. Refer to ➤ Rep. Gr. 39; Driveshaft; Driveshaft, Removing and Installing.

Continuation for All

- Remove the underbody trim panel nuts -arrows-.



- Remove the lock washers -2- and -3-.
- Lower the underbody trim panel on the inside just enough until the heat shield -1- for the center tunnel can be removed.
- Pivot the shifter housing downward and remove it with the shift cables.

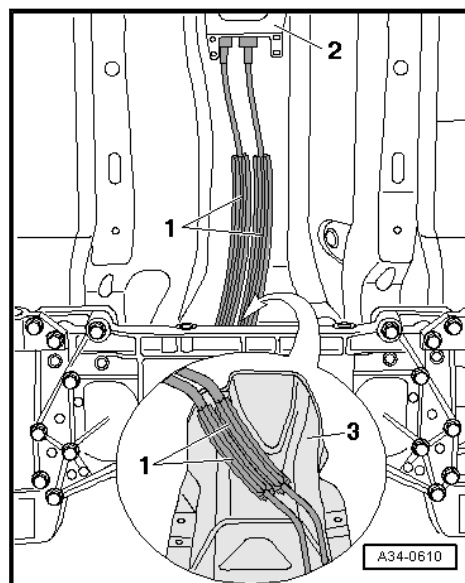
1.9.2 Installing

Install in reverse order of removal while noting the following:

- Align the shifter housing so that it is parallel to the body.
- The distance on both sides to the body must be equal.

Tighten the gearshift housing-Item 26- ➤ [Item 26 \(page 91\)](#)
or-Item 16- ➤ [Item 16 \(page 94\)](#) .

- Attach the cable mounting bracket to the transmission and tighten the bolts to the tightening specifications ➤ [Item 6 \(page 103\)](#) and ➤ [Item 10 \(page 103\)](#) .
- Route the cables -1- from the shift mechanism -2- to the transmission as follows:





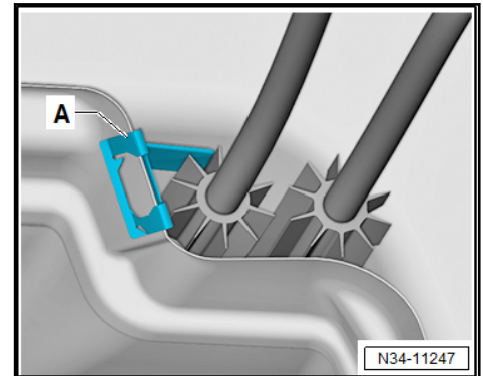
- The cables must be routed parallel to each other and must not cross each other.
- The cables must be routed inside the depression in the heat shield -3-.



Note

The heat shield from above is shown in the magnified area.

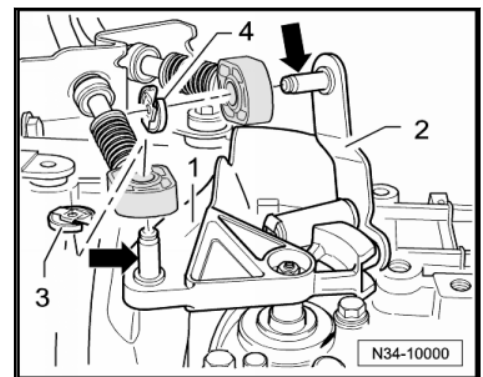
A clip -A- holds the cables and heat shield to each other in place.



The holes in the cable retainers have different diameters.

Cable retainer allocation. Refer to ➤ [Fig. "Cable retainer allocation", page 104](#).

- Apply a small amount of grease on the pins -arrows- on the shift lever -1- and, if necessary, on the relay lever -2-.



- Refer to the ➤ Electronic Parts Catalog (ETKA) for the grease allocation.
- Replace the lock washer -3- and the lock washer -4- on the metal relay lever each time they are removed.
- Secure shift cable with lock washer -3- and selector cable with lock washer -4-.

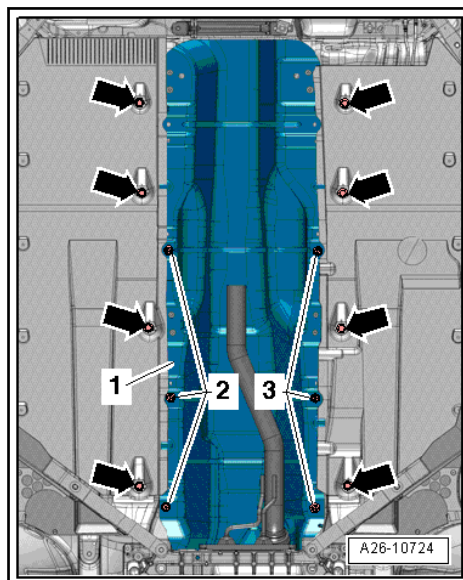
Cable Retainer with Plastic Relay Lever

- The relay lever and cable retainer must be installed together. Refer to ➤ [R1.8 elay Lever", page 108](#).
- Insert the selector cable into the cable retainer.



Continuation for All Shift Mechanisms

- Install the center console securing bracket and the center console. Refer to ⇒ Body Interior; Rep. Gr. 68; Storage Compartments, Covers and Trim.
- Install the boot with the gearshift knob and noise insulation. Refer to ⇒ [w1.4 ith Shifter Knob and Noise Insulation, Removing and Installing](#), page 87 .
- Install the heat shield -1- under the selector mechanism and attach with the lock washers -2- and -3-.



- Attach the underbody trim panel to the body -arrows-. Refer to ⇒ Body Exterior; Rep. Gr. 50; Underbody Trim Panel.

AWD Vehicles

- Install the driveshaft. Refer to ⇒ Rep. Gr. 39; Driveshaft; Driveshaft, Removing and Installing.

Continuation for All

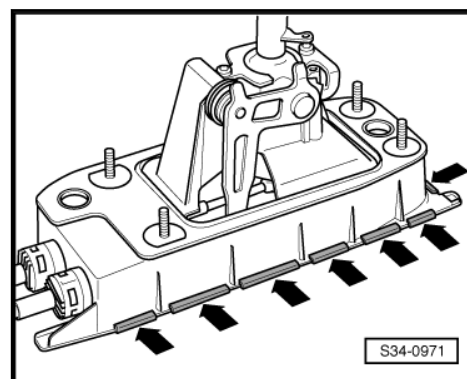
- Install the exhaust system and align it without tension. Refer to ⇒ Rep. Gr. 26; Exhaust System or ⇒ Rep. Gr. 26; Exhaust System Components.
- Install the tunnel braces under the exhaust system. Refer to ⇒ Body Exterior; Rep. Gr. 50; Tunnel Braces.
- Adjust the gearshift mechanism. Refer to ⇒ [M1.11 echanism, Adjusting](#), page 121 .
- If it was removed earlier install the complete air filter housing. Refer to ⇒ Rep. Gr. 23; Diesel Direct Injection System; Overview - Air Filter or ⇒ Rep. Gr. 24; Fuel Injection System; Air Filter, Removing and Installing.
- Complete the steps after connecting the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Disconnecting and Connecting.



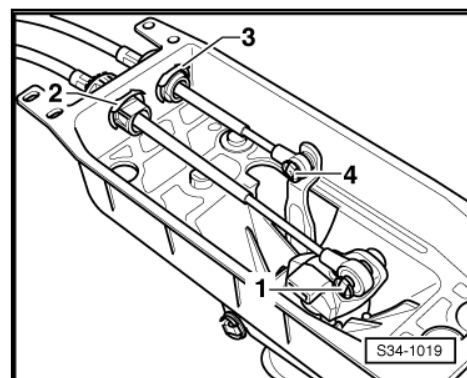
1.10 Gearshift Cable and Selector Cable, Removing and Installing

1.10.1 Removing

- Remove the selector mechanism. Refer to [⇒ 1.9.1, page 113](#).
- Bend up the tabs -arrows- on the shift mechanism base plate using a screwdriver and remove the base plate. Only the straps on the left side of the base plate are shown in the illustration.



- Remove the seal.
- Remove the lock washers -1 through 4-.

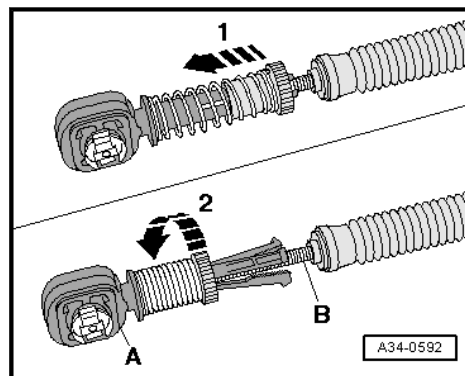


Note

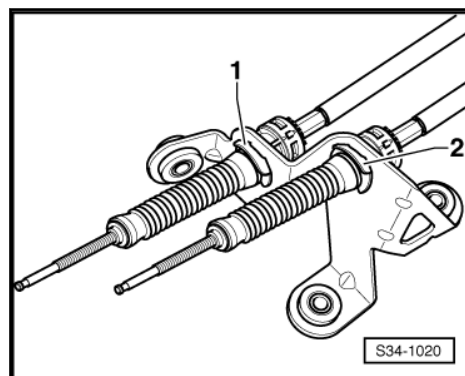
Lock washers -1 and 4- are no longer installed in shift mechanisms beginning in 11/2006.

- Pry off the shift cable (or the selector lever cable) from the gearshift lever (or selector lever) with a screwdriver.
- Remove the shift cable and selector cable from the shift housing.

Release the retainers -A- for the shift and selector cables -B- as follows:



- ◆ Push the sleeve forward as far as it will go -arrow 1-.
- ◆ Turn the sleeve to the right as far as it will go -arrow 2- until it engages.
- Remove the retainers from the cables.
- Remove the lock washers -1- and -2-.

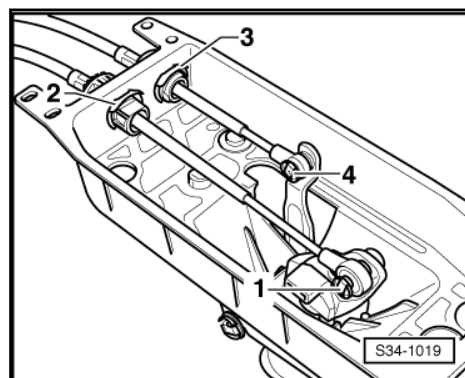


- Remove the cable bracket from the cables.

1.10.2 Installing

Install in reverse order of removal while noting the following:

- Secure the shift cable and selector cable on the shift housing with lock washers -2 and 3-.



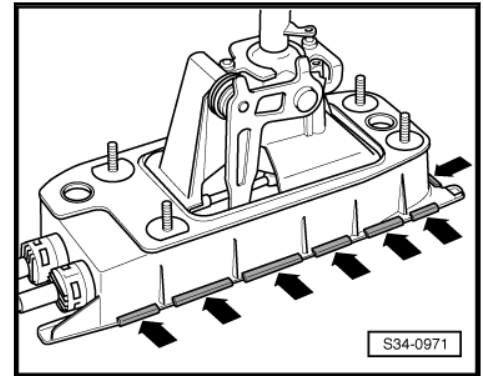
- Attach the shift cable and the selector cable to the gearshift lever and the selector lever inside the shift housing and secure it with lock washers -1 and 4-.



Note

Lock washers -1 and 4- are no longer installed in shift mechanisms beginning in 11/2006.

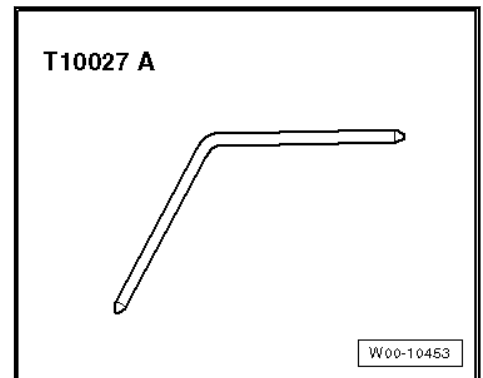
- Install the base plate with a new seal on the gearshift housing -arrows-. Refer to ➤ [Fig. “Base Plate, Mounting on Shift-er Housing”](#), [page 101](#) .



- Install the gearshift mechanism. Refer to ➤ [1.9.2](#) , [page 116](#) .
- Adjust the gearshift mechanism. Refer to ➤ [M1.11 echan-ism, Adjusting](#)”, [page 121](#) .

1.11 Shift Mechanism, Adjusting

Connecting Pin -T10027 A-

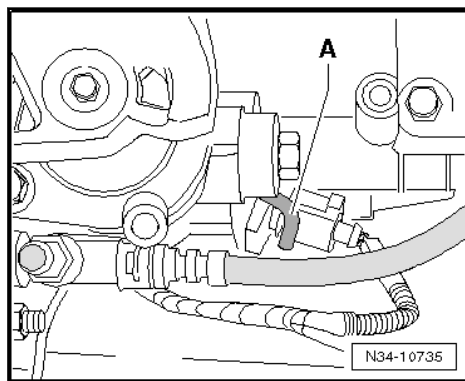


Note

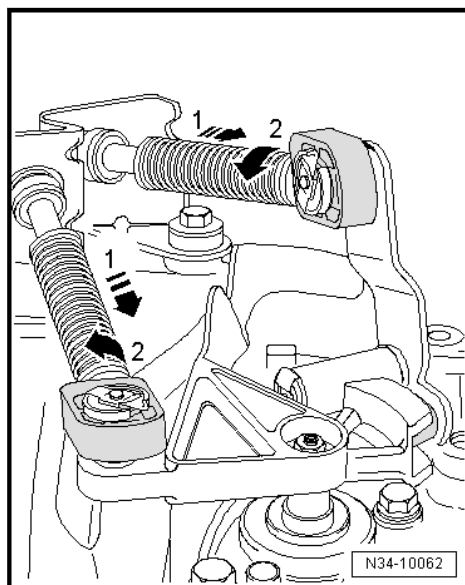
- ◆ *The following is important to make sure the gearshift adjustment is correct:*
- ◆ *Operating and transfer elements of shift mechanism must be in proper condition.*
- ◆ *Shift mechanism must move freely.*
- ◆ *The transmission, clutch and clutch mechanism must also be in proper condition.*
- Transmission in neutral.
- Remove the entire air filter housing if the bracket -A- for the selector shaft and the securing mechanism for the shift and selector cables are not accessible through it. Refer to ➤ Rep. Gr. 23; Diesel Direct Injection System; Overview -



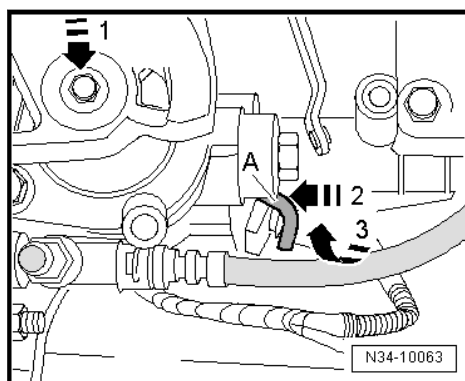
Air Filter or ➔ Rep. Gr. 24; Fuel Injection System; Air Filter,
Removing and Installing.



- Pull the safety mechanism on the cable retainer from the shift cable and the selector cable all the way forward in the -direction of the arrow 1- and then lock it to the left in the -direction of the arrow 2-.



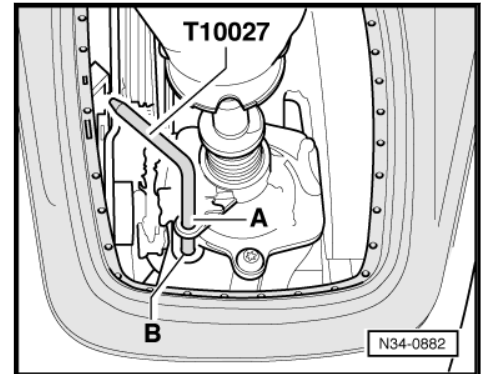
Hold the gearshift shaft secure as follows:



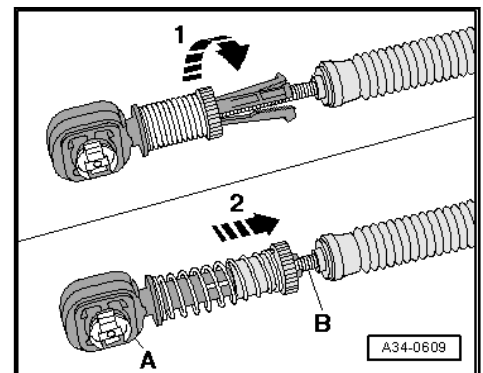
- Push the gearshift shaft downward in the -direction of arrow 1-.
- While pressing down selector shaft, rotate lock bolt -A- up-ward in -direction of arrow 3- and simultaneously press it in -direction of arrow 2- until it engages in selector shaft.

- Remove the boot with the shifter knob and frame. Refer to [w1.4 ith Shifter Knob and Noise Insulation, Removing and Installing](#), page 87.
- If equipped, remove the noise insulation.

Hold the selector lever secure as follows:



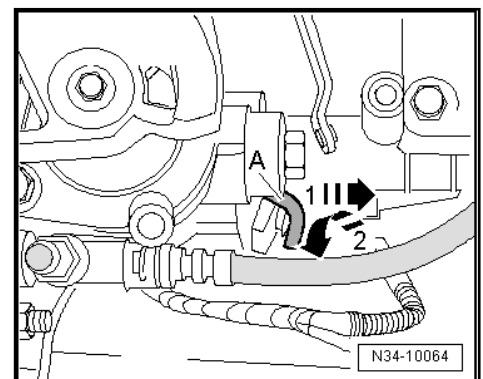
- Move the gearshift lever into neutral.
- Guide the Connecting Pin -T10027 A- through the hole -A- and into the hole -B-.
- Make sure the selector and shift cable -B- are inserted into the retainer -A- without tension.



- Turn the safety mechanism on the cable retainer from the shift cable and selector cable all the way to the right in the -direction of the arrow 1-.

The spring will push the safety mechanism into the starting position in the -direction of the arrow 2-.

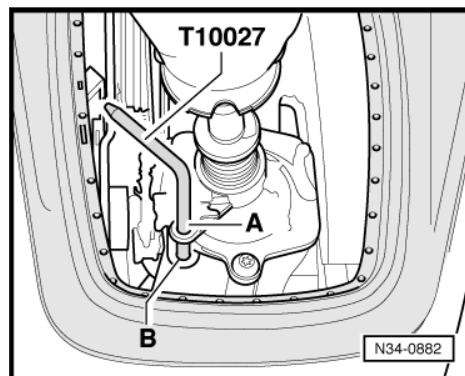
- Turn the bracket -A- back into the starting position -arrow 2-.



- The bracket -A- must get pushed out of the transmission in -direction of arrow 1-.



- Pull the Connecting Pin -T10027A- out of the holes -A- and -B-.



- If equipped, install the noise insulation.
- Install the boot, the gearshift knob and the frame. Refer to [⇒ w1.4 ith Shifter Knob and Noise Insulation, Removing and Installing”, page 87](#) .
- Make sure the gearshift shaft moves easily.
- If it was removed earlier install the complete air filter housing. Refer to ⇒ Rep. Gr. 23; Diesel Direct Injection System; Overview - Air Filter or ⇒ Rep. Gr. 24; Fuel Injection System; Air Filter, Removing and Installing.

1.11.1 Function

- The gearshift lever must be in the 3rd/4th gear selector lever gate when in neutral.
- Operate the clutch.
- Move the shift lever several times through all the gears. Pay particular attention to the function of the reverse gear lock.
- Should a gear fail to engage smoothly after repeated selection, adjust the selector mechanism again. Refer to [⇒ M1.11 echanism, Adjusting”, page 121](#) .



2 Transmission, Removing and Installing, Jetta from MY 2005 , Golf Wagon from MY 2007 and Golf Wagon from MY 2010, Vehicles with Diesel Engine and FWD

Remove the transmission. Refer to [⇒ R2.1 removing", page 125](#) .

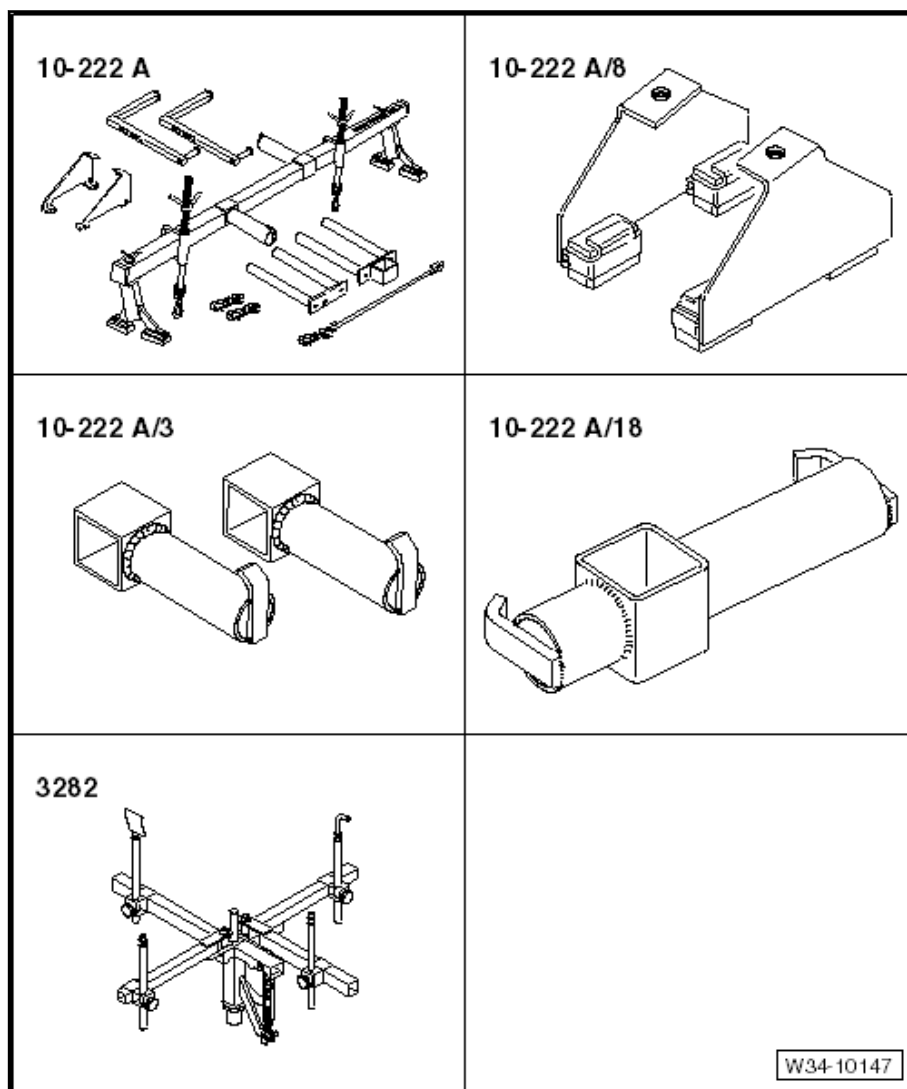
Transmission, transporting. Refer to [⇒ T6 ransporting", page 247](#) .

Install the transmission. Refer to [⇒ I2.2 nstalling", page 141](#) .

Tightening specifications. Refer to [⇒ S2.3 pecifications", page 153](#) .

2.1 Transmission, Removing

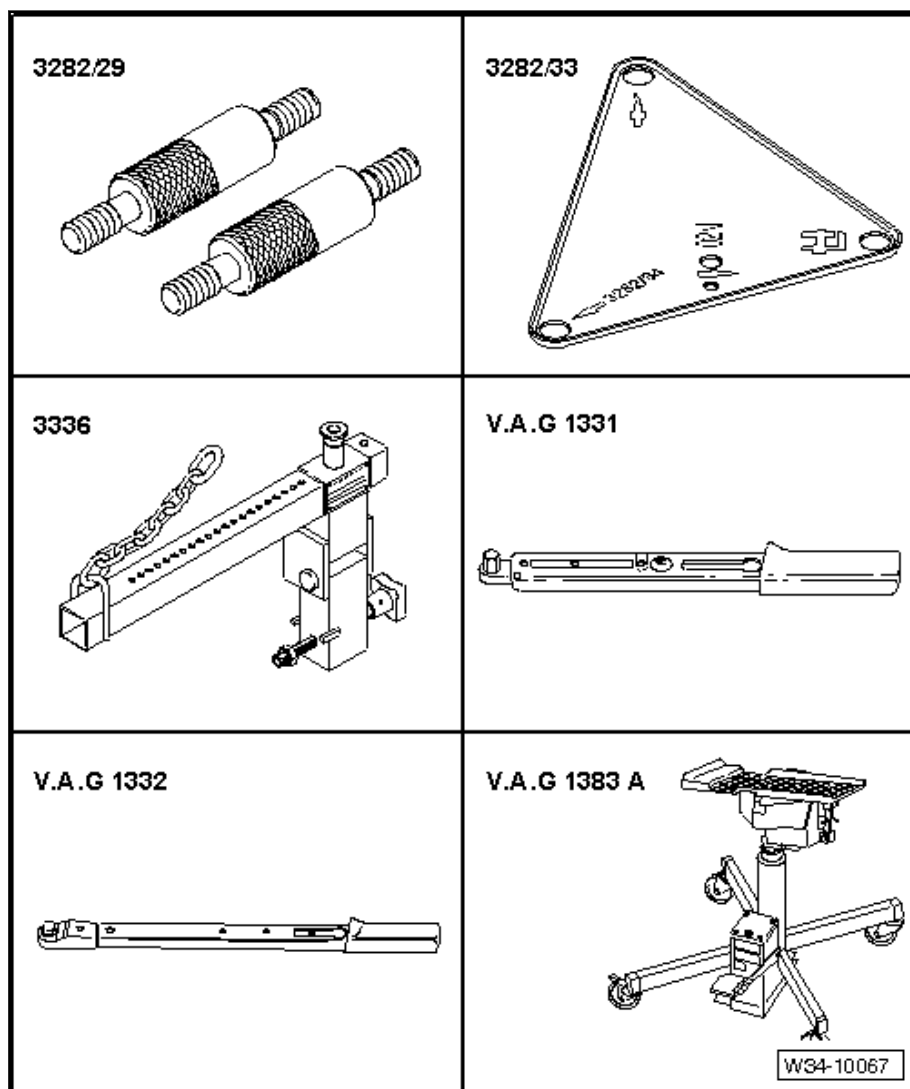
Special tools and workshop equipment required



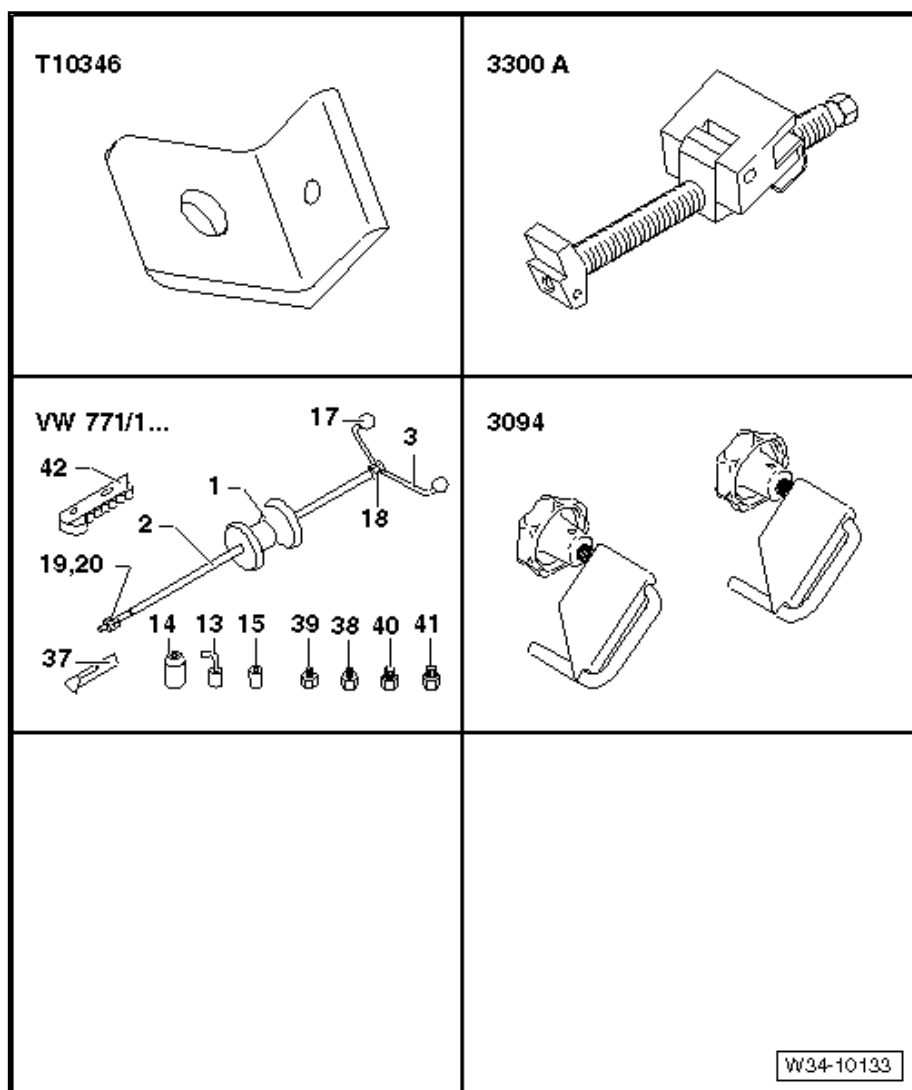
- ◆ Engine Support Bridge -10 - 222 A-
- ◆ Engine Support Bridge - Engine Support Feet -10 - 222 A /8-



- ◆ Engine Support Bridge - Engine Support 3 -10-222 A/3-
- ◆ Engine Support Bridge - Engine Support 18 -10 - 222 A /18-
- ◆ Transmission Support -3282-



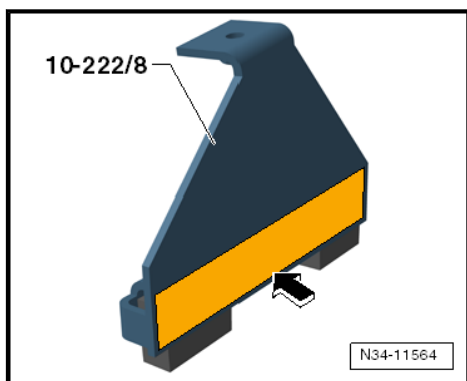
- ◆ Support Elements for transmission (determine when mounting the Mounting Plate on the Transmission Support)
- ◆ Transmission Support - Mounting Plate 33 -3282/33-
- ◆ Transmission Support Jig -3336- for transporting the transmission
- ◆ Torque Wrench 1331 5-50Nm -V.A.G 1331-
- ◆ Torque Wrench 1332 40-200Nm -V.A.G 1332-
- ◆ Engine and Gearbox Jack -VAS 6931-



- ◆ Engine Support Bridge - Gearbox Bracket -T10346-
- ◆ Engine Support Device -3300 A-
- ◆ Slide Hammer Set - Adapter 40 -VW 771/40-
- ◆ Hose Clamps - Up To 25 mm -3094-
- ◆ Lubricating Grease for Clutch Plate Splines -G 000 100-
- ◆ Determine the shift mechanism grease using the ⇒ Electronic Parts Catalog (ETKA).
- ◆ M6 x 20 collar bolt
- ◆ M6 x 80 collar bolt
- ◆ M10 x 20 hex bolt

The Engine Support Bridge -10-222 A- with the Engine Support Bridge - Engine Support Feet -10 - 222 A /8- are mounted on the longitudinal members later in the procedure.

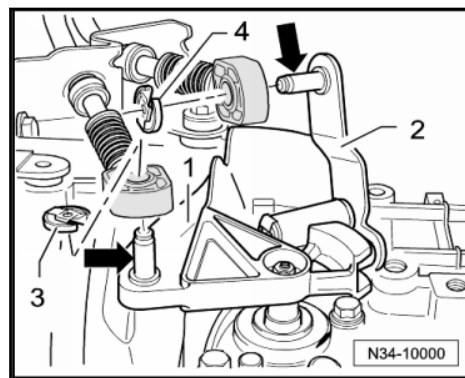
- To protect the edges of the fender, cover the bottom of both Engine Support Bridge - Engine Support Feet -10 - 222 A /8- with cloth tape -arrow-. Refer to the ⇒ Electronic Parts Catalog (ETKA Chemical Materials).



- Check if a coded radio is installed. If this is the case obtain the anti-theft code.
- Disconnect the battery ground cable. Refer to ➤ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Disconnecting and Connecting.

Later in the procedure, the Engine Support Bridge -10 -222 A- is connected to the engine lifting eyes.

- Remove the engine cover if it is blocking the lifting eyes.
- Remove the air filter housing if it is located near the battery. Refer to ➤ Rep. Gr. 23; Diesel Direct Injection System, Overview - Air Filter.
- Remove the battery, the battery cover and the battery tray. Refer to ➤ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Removing and Installing.
- Remove the shift cable lock washer -3- from the transmission shift lever -1- and remove the cable from the pin -arrow-.

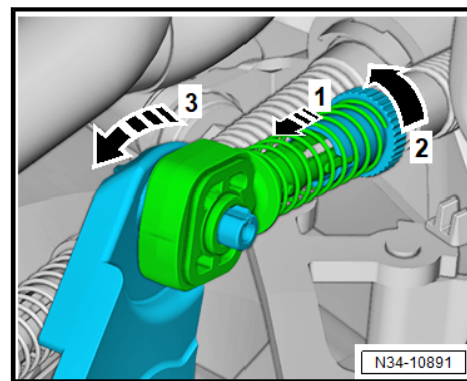


Metal Relay Lever

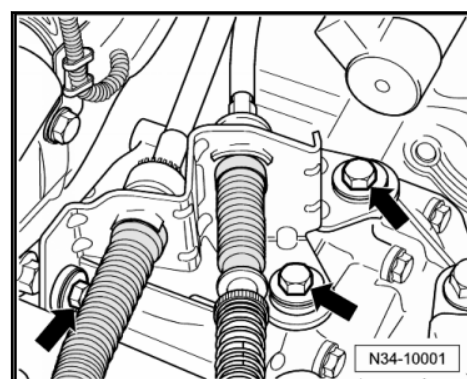
- Remove the selector cable lock washer -4- from the relay lever -2- and remove the cable from the pin -arrow-.

Plastic Relay Lever

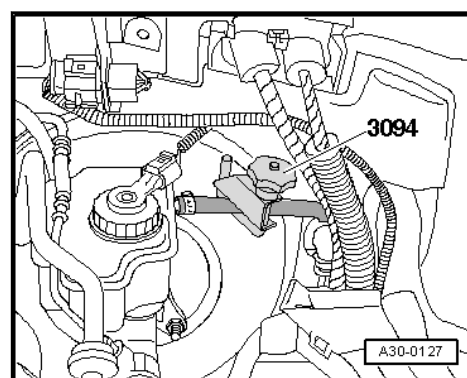
- Remove the cable retainer from the selector cable.



- To avoid damage to the selector cable, the cable retainer must be disconnected from the selector lever before removal.
- Pull the securing mechanism all the way forward in -direction of the arrow 1- and then unlock to the left in -direction of the arrow 2-.
- Press the relay lever forward (-direction of the arrow 3-).
- The relay lever is removed together with the cable retainer later in the procedure.
- Remove the cable bracket from the transmission -arrows-, tie up to the side.



Vehicles with a pipe between the clutch master and slave cylinders



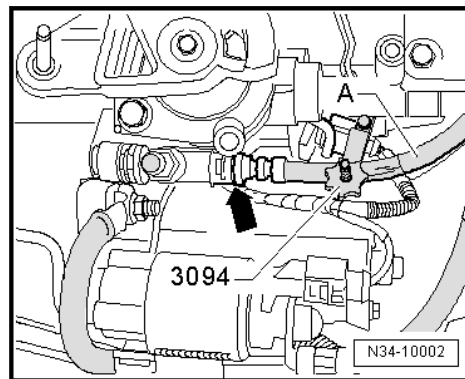
- Clamp the clutch master cylinder hose using a Hose Clamps - Up To 25mm -3094-.



Note

- ◆ *There will be a permanent deformation in the hose after using the Hose Clamps - Up To 25mm -3094-.*
- ◆ *However, the hose is not faulty.*
- ◆ *After removing the Hose Clamps - Up To 25mm -3094-, the hose must be formed back into its original shape.*

Vehicles with a hose/line assembly between the clutch master and slave cylinders



- Clamp off the hose on the hose/line assembly -A- to the clutch slave cylinder using the Hose Clamps - Up To 25mm -3094-.

Continuation for All

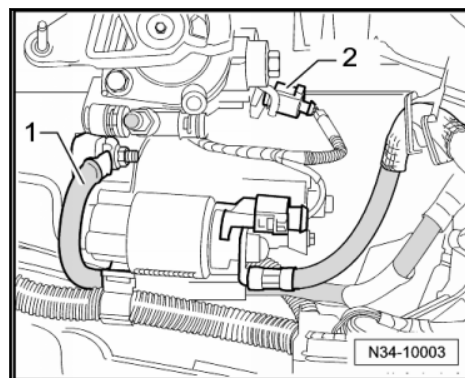
- Pull the clamp -arrow- for the hose/line assembly or pipe out to the stop.
- Remove the hose/line assembly or pipe from the bleed-er/clutch slave cylinder and seal it off.



Caution

Do not press the clutch pedal anymore.

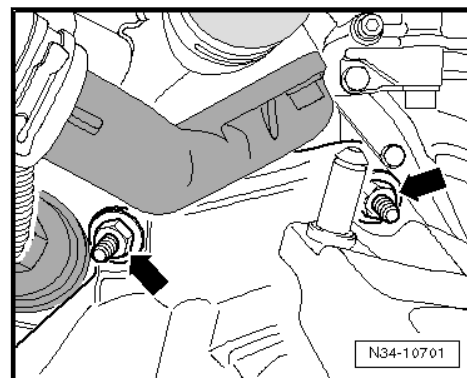
- Remove the ground wire -1- from the top starter bolt.



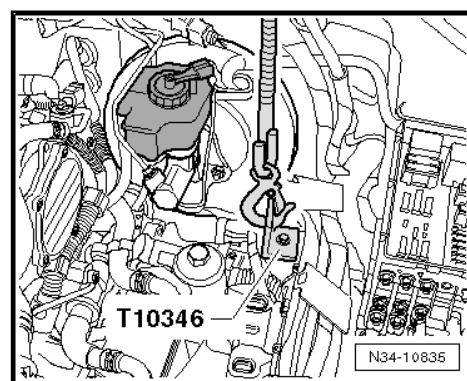
- Disconnect the connector -2- from the Back-Up Lamp Switch -F4-.
- Remove the connector and wire from the starter.



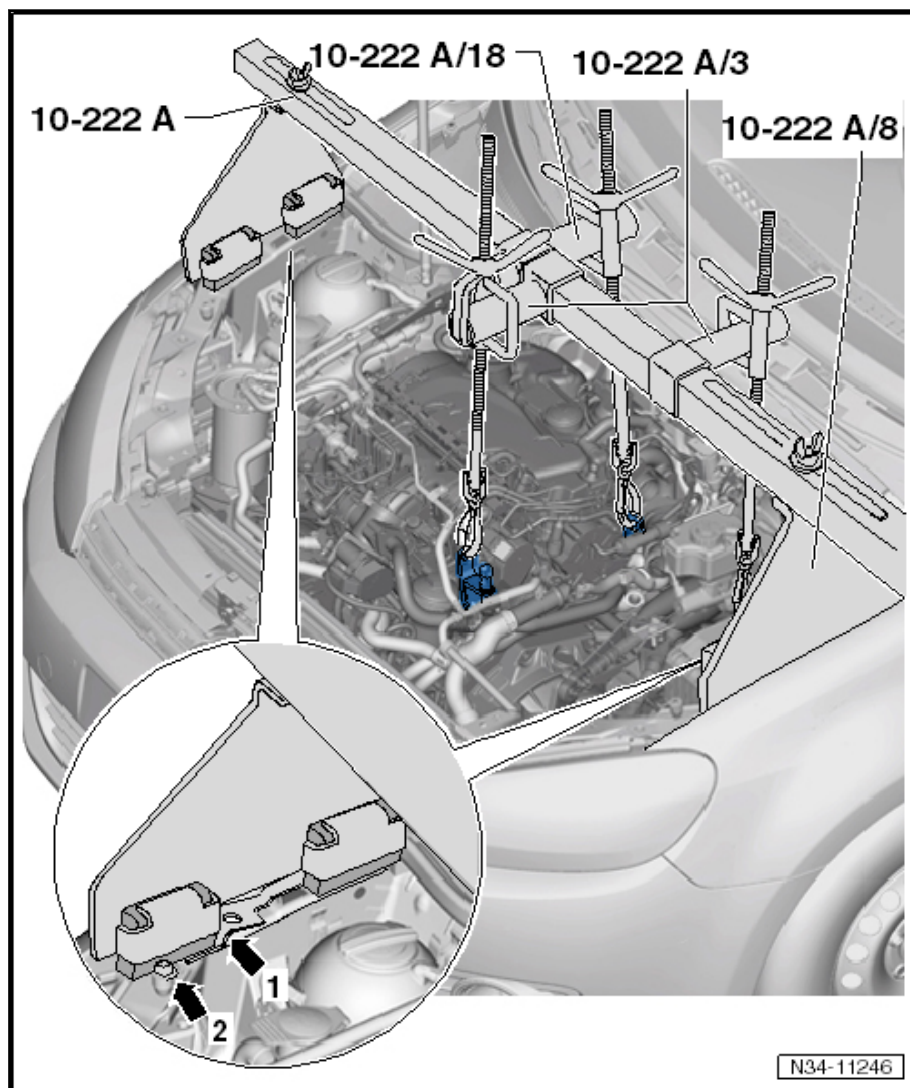
- Remove the upper engine/transmission connecting bolts -arrows-.



- Remove the upper bolt from the starter.
- Install the Engine Support Bridge - Gearbox Bracket - T10346- in the most rear hole out of the three holes in the battery tray.

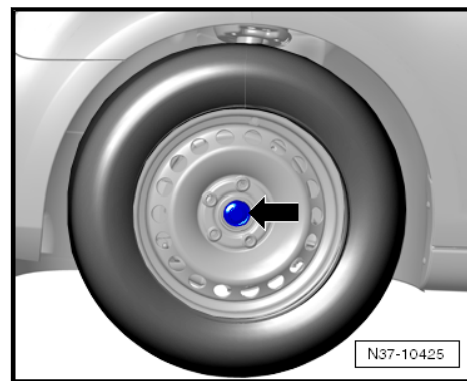


- To do so, use a M6 x 80 collar bolt or one of the battery tray bolts.
- Disconnect any hoses and cables located near the engine lifting eyes for the Engine Support Bridge -10-222 A-.
- Position the Engine Support Bridge -10-222 A- in front of the hood support.

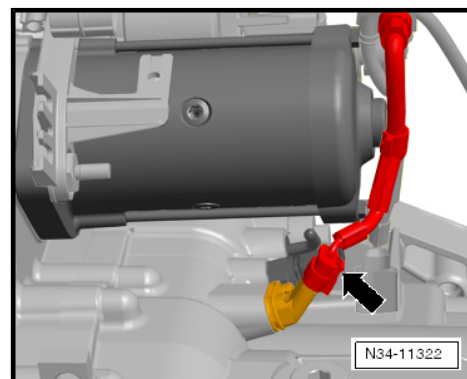


- Use:
 - ◆ Engine Support Bridge - Engine Support 3 -10-222 A/3-
 - ◆ Engine Support Bridge - Engine Support Feet -10 - 222 A /8-
 - ◆ Engine Support Bridge - Engine Support 18 -10 - 222 A /18-
- Position the Engine Support Bridge - Engine Support Feet -10-222 A /8-:
 - On the upper longitudinal members, directly in front of the ridge (-arrow 1-) next to the bolt (-arrow 2-)
- Then connect the Engine Support Bridge - Gearbox Bracket -T10346- to the Engine Support Bridge.
- Hook the Spindles into the left lifting eyes on the engine.
- Lightly pretension the engine/transmission assembly and Engine Support Bridge using the spindles.

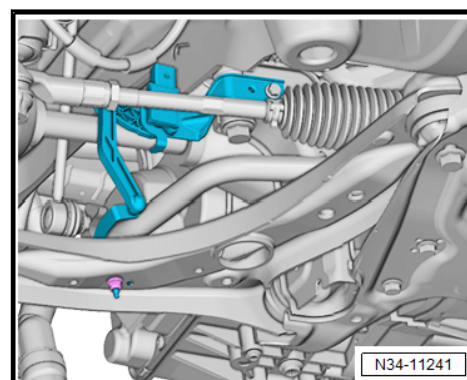
The left drive axle must be removed later in the procedure.



- With the vehicle still resting on its wheels, loosen the left front collar bolt -arrow- a maximum of 90°, otherwise the wheel bearing will become damaged. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axles, Removing and Installing.
- Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 50; Noise Insulation.
- Remove the lower section of the left front wheel housing liner. Refer to ⇒ Body Exterior; Rep. Gr. 66; Wheel Housing Liner.
- Transmission for vehicles with Start/Stop System: disconnect the connector -arrow- from the Transmission Neutral Position Sensor -G701-.



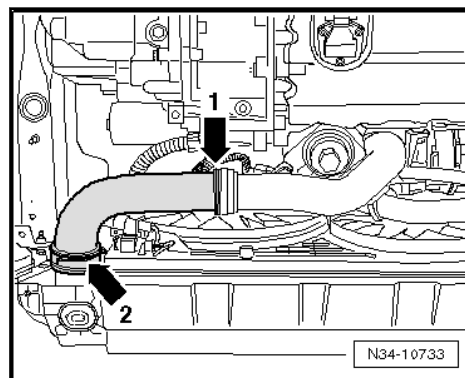
- Remove the Left Front Level Control System Sensor -G78- from the control arm, if equipped. Refer to ⇒ Rep. Gr. 40; Left Front Level Control System Sensor -G78-, Removing and Installing.



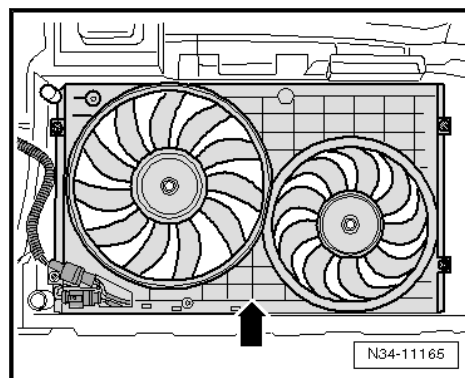
- Remove the bracket from the starter.
- Remove the starter. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Starter; Starter, Removing and Installing.



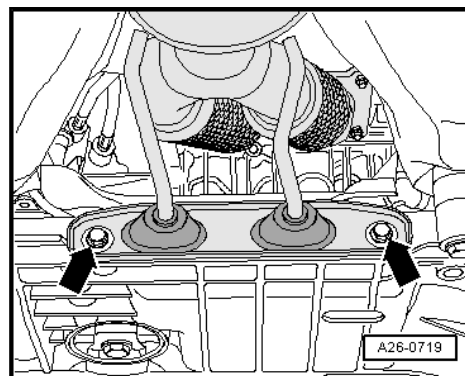
- Remove the left charge air hose -arrow 1- and -arrow 2-. Refer to ➔ Rep. Gr. 21; Charge Air System with Turbocharger.



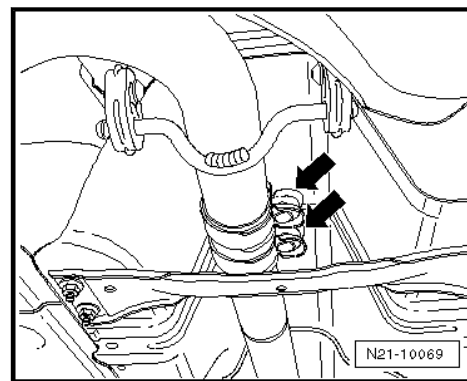
- Remove the charge air pipe from the engine. Refer to ➔ Rep. Gr. 21; Charge Air System with Turbocharger.
- Remove the right charge air hose from the charge air cooler. Refer to ➔ Rep. Gr. 21; Charge Air System with Turbocharger.
- Remove the air shroud -arrow- together with the radiator fans. Refer to ➔ Rep. Gr. 19; Cooling System Components.



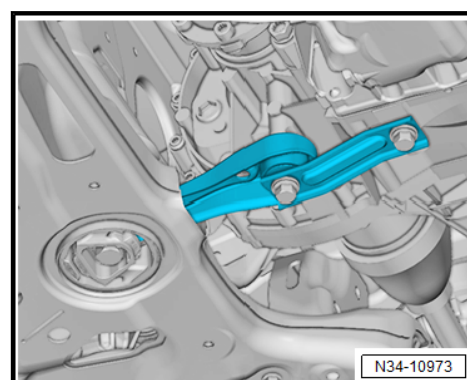
- Remove the exhaust system bracket from the subframe -arrows-. Refer to ➔ Rep. Gr. 26; Exhaust System or ➔ Rep. Gr. 26; Exhaust System Components.



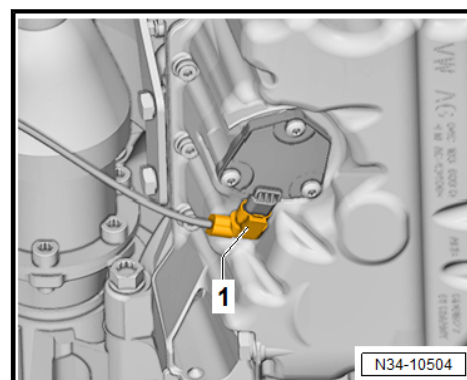
- Disconnect the exhaust system at the double clamp -arrows-.



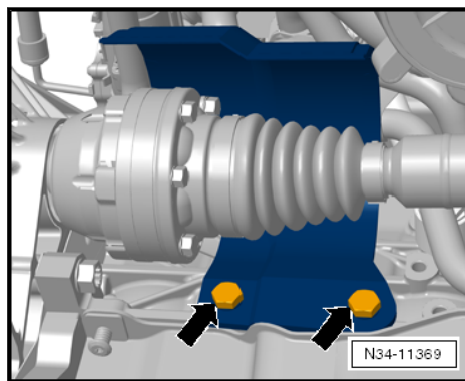
- Tie up the front exhaust pipe or lay it on the tunnel brace.
- Remove the pendulum support.



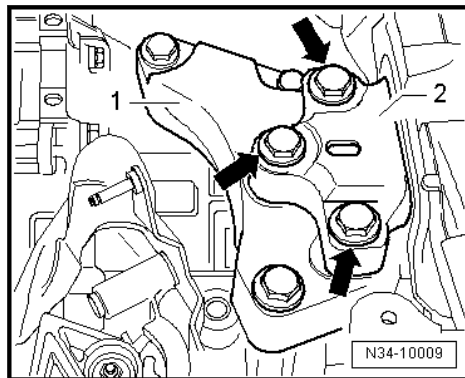
- Disconnect the connector -1- from the Oil Level Thermal Sensor -G266-.



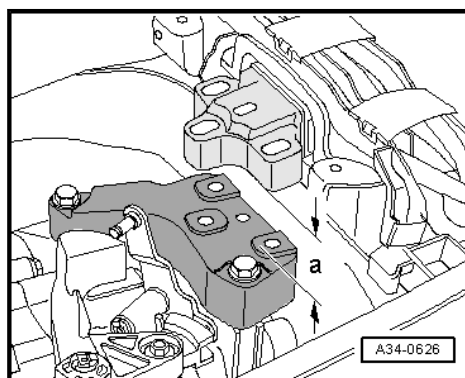
- Remove the left coupling rod from the stabilizer bar and move it to the side. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Front Suspension, Servicing.
- Remove the left drive axle. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axles, Removing and Installing.
- If equipped, remove the drive axle heat shield -arrows-. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Shaft Servicing - Drive Shaft Overview.



- Remove the right drive axle from the transmission and tie it up. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axles, Removing and Installing.
- Remove the hex bolts -arrows- on the left assembly mount -2- from the bracket -1-.



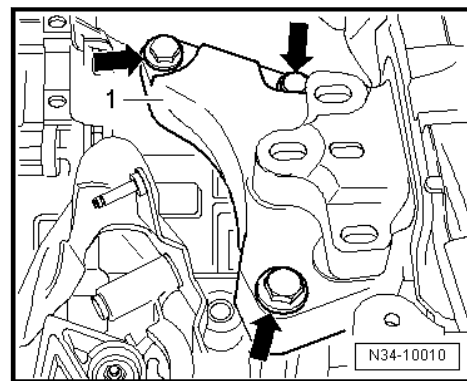
- Lower the transmission by adjusting the spindles, which are attached to the engine, to dimension -a- approximately 40 mm.



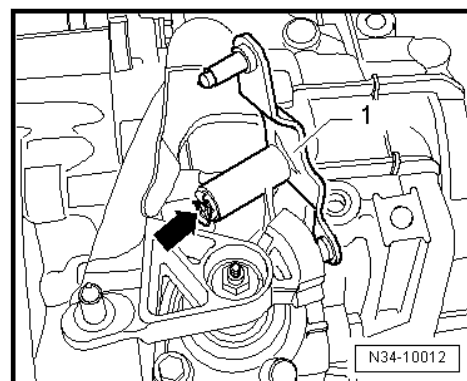
Note

When moving the engine/transmission assembly, pay attention to the connecting lines, hoses and radiator.

- Remove the bracket -1- from the transmission -arrows-.



Metal Relay Lever



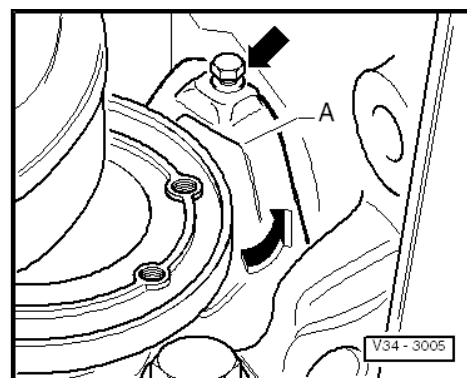
- Remove the lock washer -arrow- from the relay lever -1- and then remove the relay lever.

Plastic Relay Lever

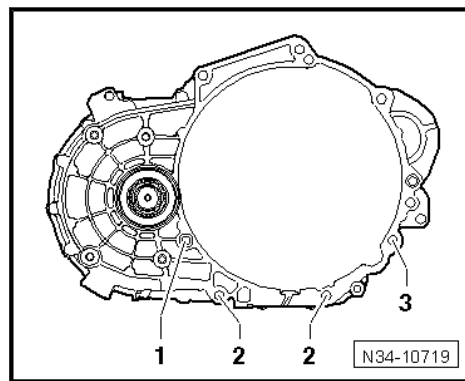
- Remove the relay lever with the cable retainer. Refer to ➤ [R1.8 relay Lever", page 108](#) .

Continuation for All

- Remove the gearshift lever from the gearshift shaft.
- If equipped, remove the small cover plate -A- for the flywheel -arrows-.



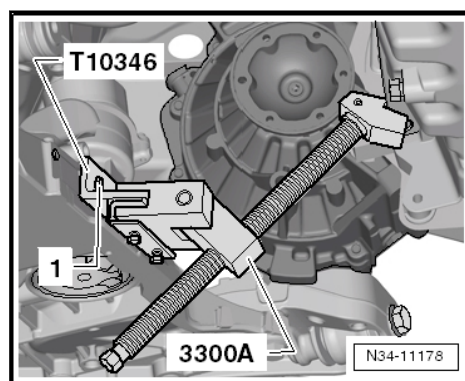
- Remove the lower engine/transmission connecting bolt -1-.



Note

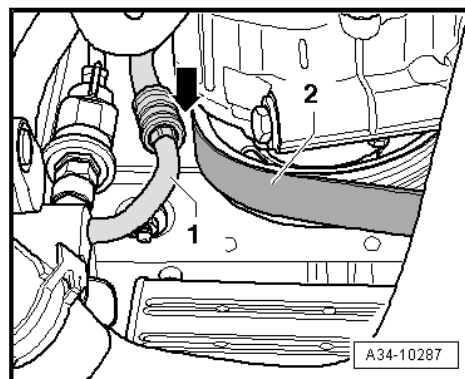
Loosen the engine/transmission connecting bolt -3- and leave it in so that it is hand-tight.

- Tighten the Engine Support Bridge - Gearbox Bracket - T10346- with the bolt -1- in the left threaded hole in the subframe.



-1- = M6 x 20 collar bolt

- Secure the Engine Support Device -3300A- to the Engine Support Bridge - Gearbox Bracket -T10346-.
- Place a cloth between the Engine Support Device -3300 A- and oil pan.
- Push the engine forward using the spindle on the Engine Support Device -3300 A-. Note the following when doing this:



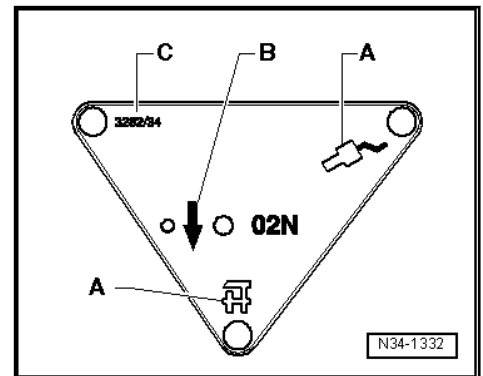
- The A/C compressor -2- must not touch the refrigerant line -1- -arrow-.



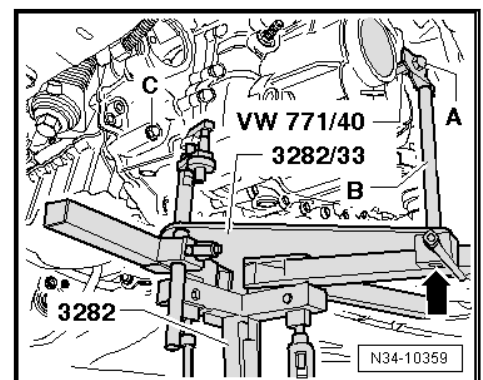
- The generator must not contact the refrigerant line.
- The pressure pipe must not contact the radiator.

Set up the Transmission Support -3282- with the Transmission Support - Mounting Plate 33 -3282/33- to remove transmission "02Q".

- Insert the Transmission Support -3282- into the Engine and Gearbox Jack -VAS 6931-.
- Align the arms of the Transmission Support so that they align with the holes in the Adjustment Plate.
- Install the Mounting Elements -A- as shown on the Adjusting Plate.



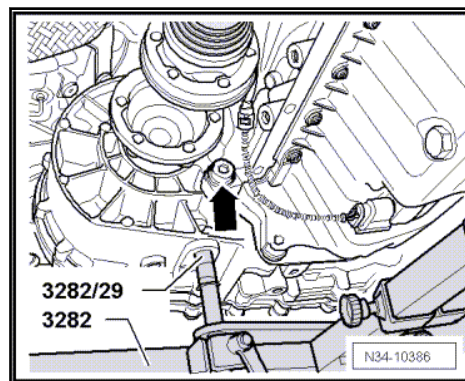
- Install the Transmission Support - Pins 29 -3282/29- instead of the Mounting Element -C-.
- Position the Engine and Gearbox Jack -VAS 6931- under the vehicle. The arrow symbol -B- on the Adjusting Plate points in the direction of travel.
- Align the Adjustment Plate so that it is parallel to the transmission.
- Secure the Slide Hammer Set - Adapter 40 -VW 771/40- inside the threaded hole in the transmission housing as shown.



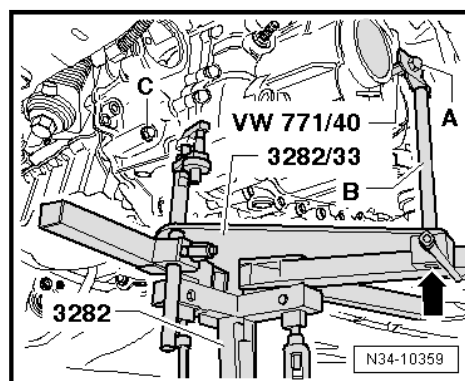
- Install the Transmission Support - Pins 29 -3282/29- into the hole on the transmission for the pendulum support bolt.
- Secure the transmission on the Transmission Support -3282- with an M10 x 20 bolt -A-.

The drift -B- must be flush at the bottom with the guide on the Transmission Support -3282- -arrow-.

The engine/transmission connecting bolt -arrow- is removed.

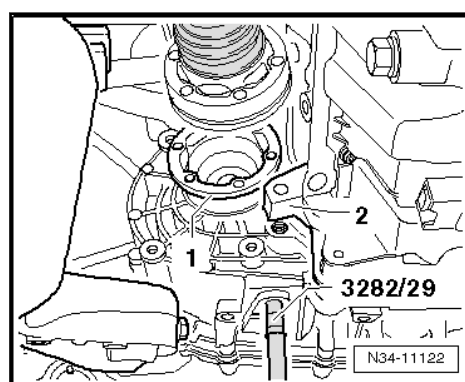


- Remove the engine/transmission connecting bolt -C- and the lower engine/transmission connecting bolts.

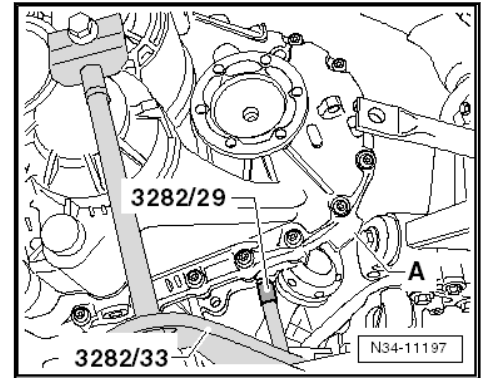


- Separate the transmission from the engine (alignment sleeves).
- Move the transmission in the area of the differential with the spindles of the Transmission Support -3282- into an angled position.
- The differential, near the transmission, must face upward.

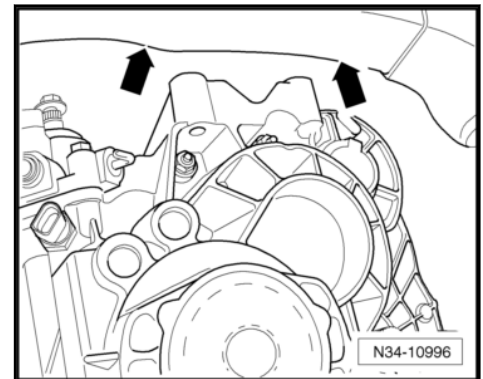
The right flange shaft -1- must be guided over the engine eye -2-.



- Guide the transmission and the differential over the sub-frame -A- and swing it out.



- Pay attention to the longitudinal member -arrows-. Then carefully lower the transmission.



Note

Pay attention to all of the lines when lowering the transmission.

2.2 Transmission, Installing

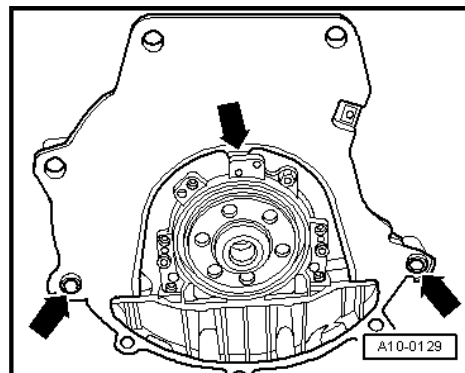
Note

- ◆ Refer to "Transmission, Removing" to get a list of the special tools needed ⇒ [R2.1 emoving", page 125](#) .
- ◆ Replace the self-locking nuts and bolts.
- ◆ Replace any bolts that were tightened with an additional turn.
- ◆ Install any cable ties that were loosened or cut off during removal at their same location.
- ◆ Clean the input shaft splines and (on used clutch plates) the hub splines. Remove any corrosion and only apply a very thin coat of Lubricating Grease for Clutch Plate Splines -G 000 100- to the splines. Then move the clutch plate back and forth on the input shaft until the hub moves freely on the shaft. Excess grease must be removed.
- If the transmission is replaced, transfer the shift lever and the relay lever.
- Clean any locking compound residue from all threaded holes using a tap.
- Check whether there are centering sleeves for the engine/transmission in the cylinder block; install if necessary.

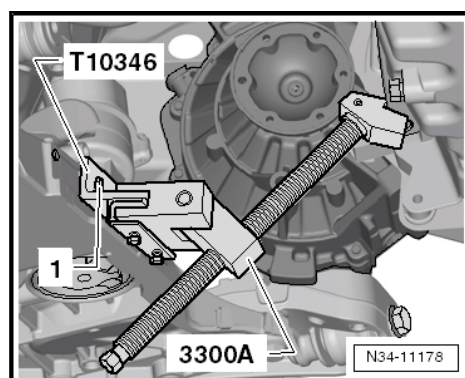


If the alignment sleeves are missing, it will be difficult to shift, there will be clutch problems and the transmission may make noises (loose rattling).

- Make sure the intermediate plate is engaged on the sealing flange and pushed onto the alignment sleeves -arrows-.

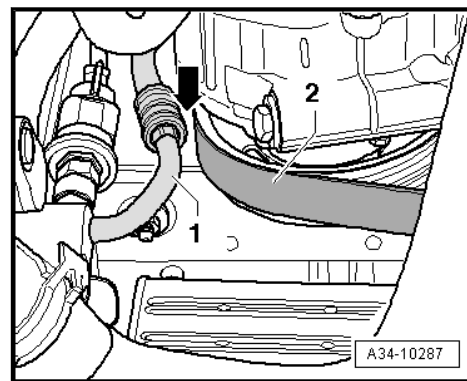


- Check the release bearing for wear. Replace the clutch slave cylinder with release bearing if necessary. Refer to [⇒ S3.2 lave Cylinder with Release Bearing, Removing and Installing”, page 60](#) .
- Tighten the Engine Support Bridge - Gearbox Bracket - T10346- with the bolt -1- in the left threaded hole in the subframe.



-1- = M6 x 20 collar bolt

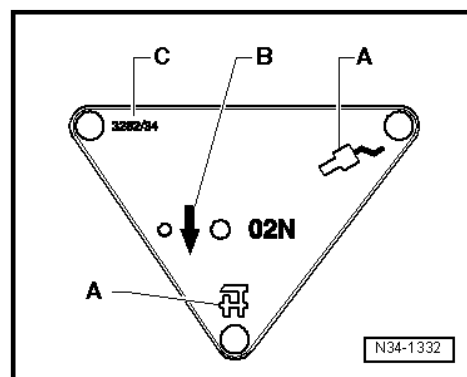
- Secure the Engine Support Device -3300A- to the Engine Support Bridge - Gearbox Bracket -T10346-.
- Place a cloth between the Engine Support Device -3300 A- and oil pan.
- Push the engine forward using the spindle on the Engine Support Device -3300 A-. Note the following when doing this:



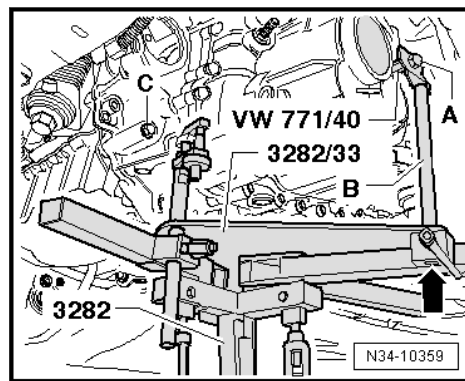
- The A/C compressor -2- must not touch the refrigerant line -1- -arrow-.
- The generator must not contact the refrigerant line.
- The pressure pipe must not contact the radiator.

Align the Transmission Support -3282- with the Transmission Support - Mounting Plate 33 -3282/33- in order to install the "02Q" transmission.

- Align the arms of the Transmission Support so that they align with the holes in the Adjustment Plate.
- Install the Mounting Elements -A- as shown on the Adjusting Plate.



- Install the Transmission Support - Pins 29 -3282/29- instead of the Mounting Element -C-.
- Place the transmission on the Engine and Gearbox Jack -VAS 6931-.
- Align the Adjusting Plate and transmission so that they are parallel to each other.
- Install the Transmission Support - Pins 29 -3282/29- into the hole on the transmission for the pendulum support bolt.
- Secure the Slide Hammer Set - Adapter 40 -VW 771/40- inside the threaded hole in the transmission housing as shown.



- Secure the transmission on the Transmission Support -3282- with an M10 x 20 bolt -A-.

The drift -B- must be flush at the bottom with the guide on the Transmission Support -3282- -arrow-.

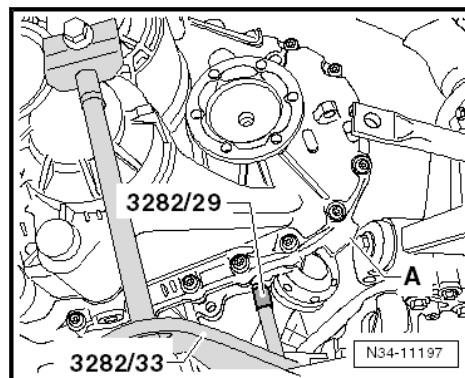
- Position the Engine and Gearbox Jack -VAS 6931- under the vehicle. The arrow on the adjusting plate points in the direction of travel.



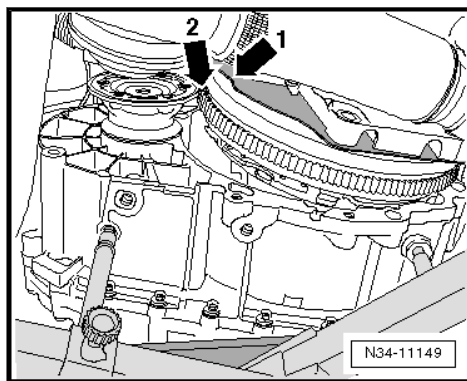
Note

Pay attention to all of the lines when installing the transmission.

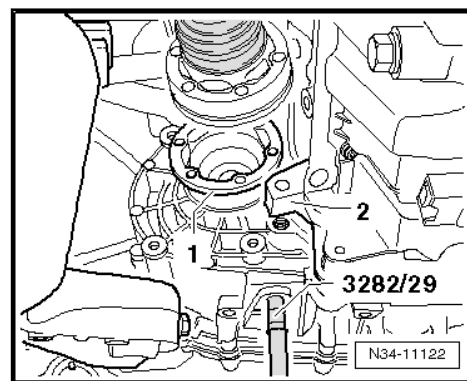
- Lift the transmission carefully.
- Now turn the transmission upward in the differential area and downward in the 6th gear area using the spindles on the Transmission Support -3282-.



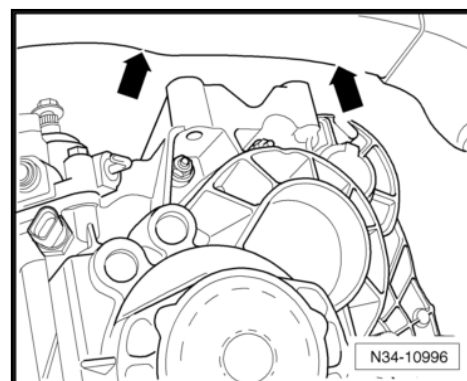
- Guide the transmission and differential -A- over the sub-frame.
- The right flange shaft must be guided past the flywheel -arrow 2-; pay attention to the intermediate plate -arrow 1-.



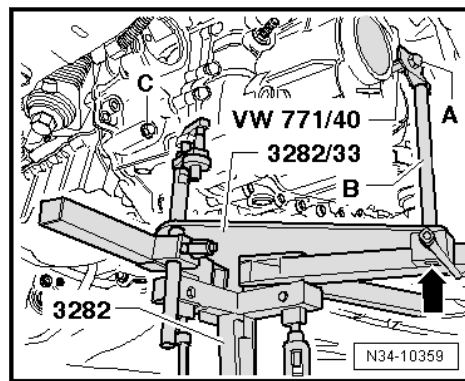
- The right flange shaft -1- must be guided over the engine eye -2-.



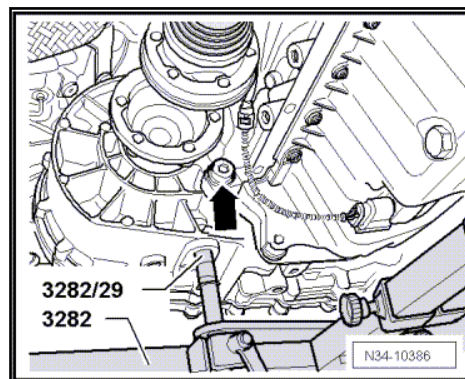
- At the same time, change the position of the transmission using the spindles from the Transmission Support -3282- so that it does not come into contact with the longitudinal member -arrows-.



- Turn the transmission to its installation position using the spindles of the Transmission Support -3282-.
- Align the transmission to the engine (alignment sleeves) and insert it.
- Install the engine/transmission connecting bolt -C- and tighten to tightening specification. Refer to ➤ [S2.3 specifications](#), [page 153](#).

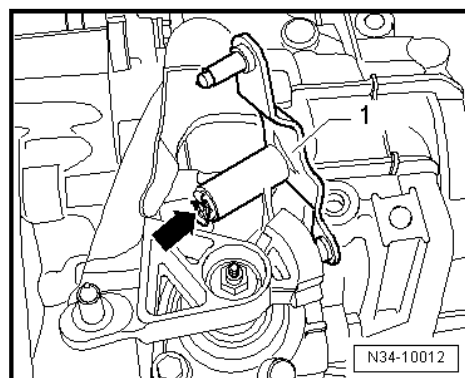


- Install the lower engine/transmission connecting bolts and tighten to tightening specification. Refer to [⇒ S2.3 specifications, page 153](#).
- Remove the Engine Support Device -3300 A- and Engine Support Bridge - Gearbox Bracket - T10346-.
- Install the engine/transmission connecting bolt -arrow- and tighten it to the tightening specification. Refer to [⇒ S2.3 specifications, page 153](#).



- After transmission is bolted to the bottom of the engine, remove the Transmission Support -3282- from the transmission.
- Install the upper engine/transmission connecting bolts and tighten them to the tightening specification. Refer to [⇒ S2.3 specifications, page 153](#).
- Attach the shift lever to the transmission gearshift shaft (refer to [⇒ Fig. "Shift Lever, Installing", page 105](#)) and tighten the hex nut to the tightening specification [⇒ Item 17 \(page 104\)](#).

Metal Relay Lever





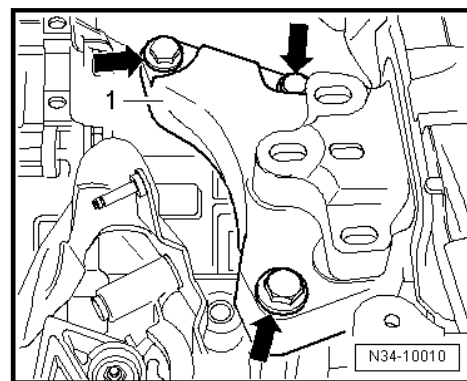
- Insert the relay lever -1- and clip in the lock washer -arrow-.

Plastic Relay Lever

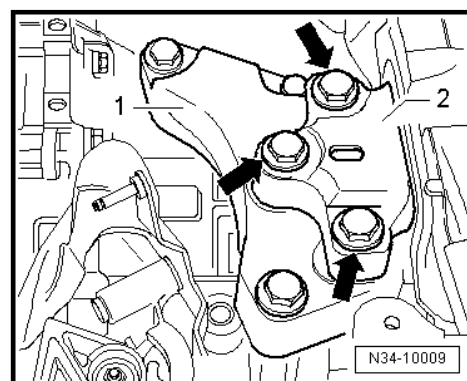
- Install the relay lever with the cable retainer. Refer to ➤ [R1.8 relay Lever", page 108](#) .

Continuation for All

- Attach the bracket -1- with the new hex bolts to the transmission -arrows- and tighten them to the tightening specification. Refer to ➤ [S2.3 pecifications", page 153](#) .



- Align the engine/transmission in its installation position. To do so, lift it until the bracket -1- lies all the way against the left assembly mount -2-



- Install the new hex bolts -arrows- for the left assembly mount -2- in the bracket -1- and tighten to the tightening position. Refer to ➤ [S2.3 pecifications", page 153](#) .



Note

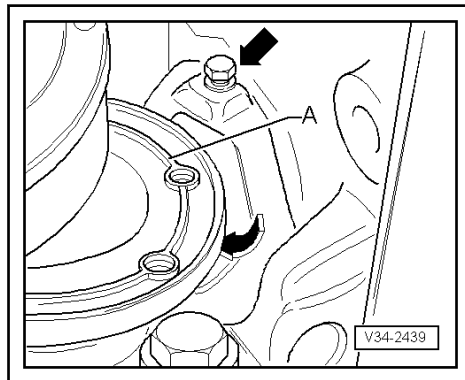
Install the engine/transmission mount free of tension. Refer to ➤ Rep. Gr. 10; Engine, Removing and Installing.



WARNING

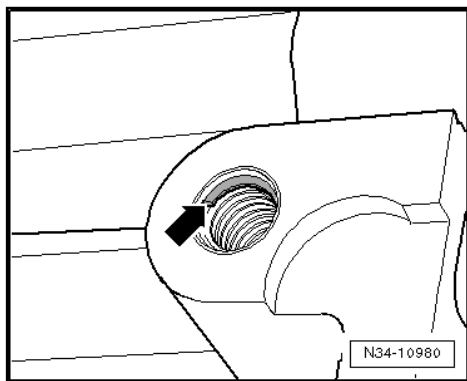
Only remove the Engine Support Bridge -10 - 222 A- if all of the bolts for the assembly mount are tightened to the tightening specification.

- If equipped, install the small cover plate -A- for the flywheel -arrows-. Refer to ➤ [S2.3 pecifications", page 153](#) .



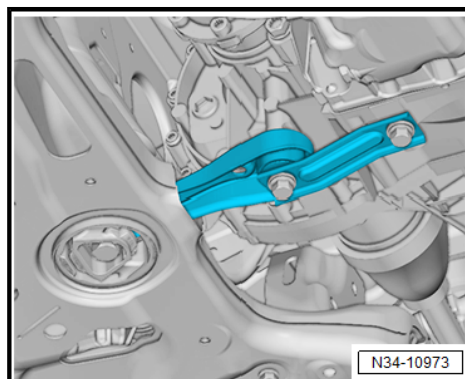
Note

- ◆ There are threaded inserts (for example "Heli Coil") in the pendulum support fastening holes.
- ◆ Identifying feature: there is a collar on the first thread -arrow-.

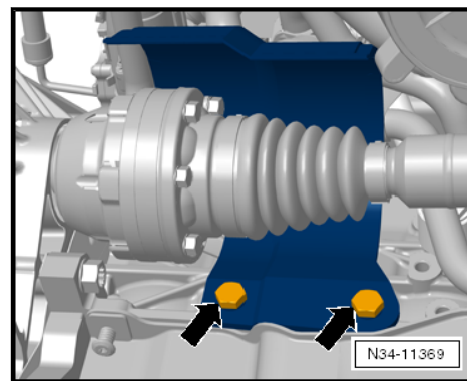


Observe the correct bolts and tightening specifications. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Overview - Subframe, Stabilizer Bar and Control Arms.

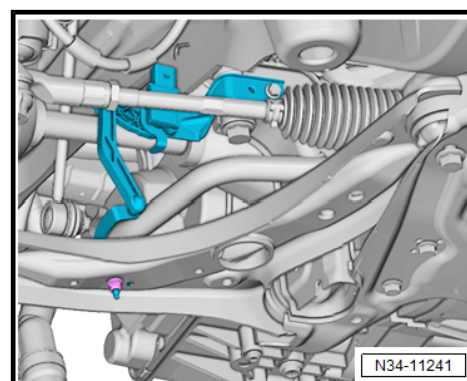
- Install the pendulum support. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Subframe, Overview - Stabilizer Bar and Control Arms.



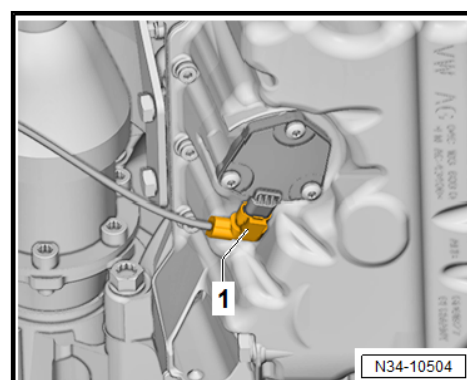
- Install the drive axles. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axle, Removing and Installing.
- If equipped, install the drive axle heat shield -arrows-. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Shaft Servicing - Drive Shaft Overview.



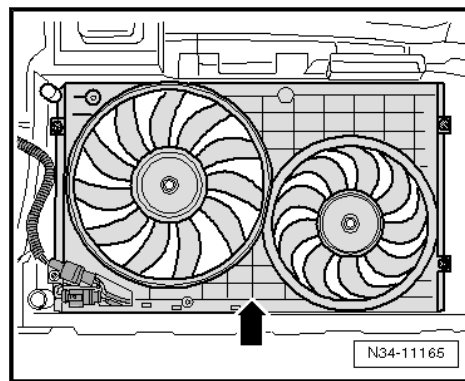
- Install the left coupling rod. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Front Suspension, Servicing.
- Install the Left Front Level Control System Sensor -G78- in the control arm, if equipped. Refer to ⇒ Rep. Gr. 40; Left Front Level Control System Sensor -G78-, Removing and Installing.



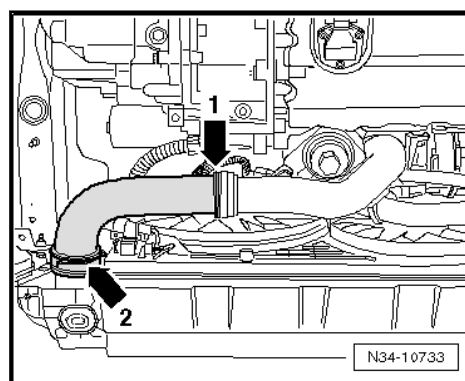
- Connect the connector -1- to the Oil Level Thermal Sensor -G266-.



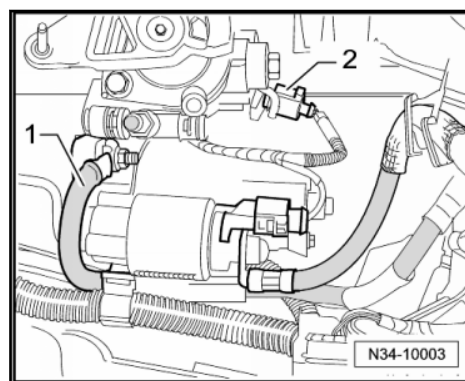
- Assemble the exhaust system and install the exhaust system bracket to the subframe. Refer to ⇒ Rep. Gr. 26; Exhaust System or ⇒ Rep. Gr. 26; Exhaust System Components.
- Install the air shroud -arrow- and the radiator fans. Refer to ⇒ Rep. Gr. 19; Cooling System Components.



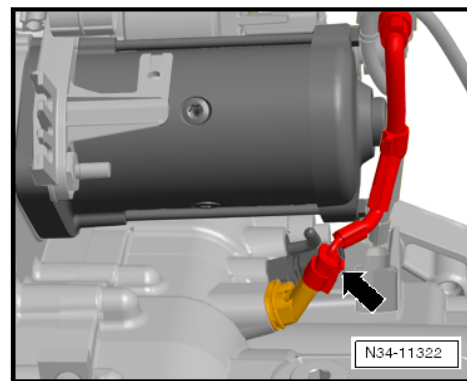
- Attach the charge air pipe to the engine. Refer to ⇒ Rep. Gr. 21; Charge Air System with Turbocharger.
- Install the left charge air hose -arrow 1- and -arrow 2-. Refer to ⇒ Rep. Gr. 21; Charge Air System with Turbocharger.



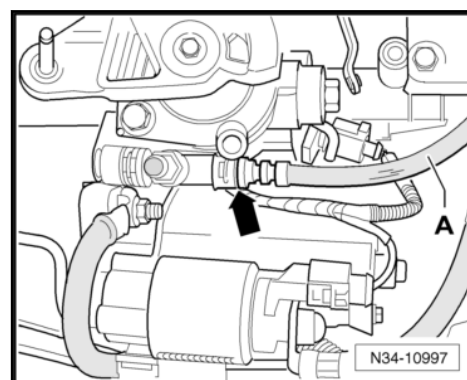
- Attach the right charge air hose to the charge air cooler. Refer to ⇒ Rep. Gr. 21; Charge Air System with Turbocharger.
- Then insert the starter and secure it with the lower bolt. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Starter; Starter, Removing and Installing.
- Attach the bracket for the wires to the lower starter bolt.
- Install the upper starter bolt and connect the connectors and wires to the starter. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Starter; Starter, Removing and Installing.
- Secure the ground wire -1- to the upper starter bolt.



- Connect the connector -2- to the Back-Up Lamp Switch -F4-.
- Transmission for vehicles with Start/Stop System: connect the connector -arrow- to the Transmission Neutral Position Sensor -G701-.

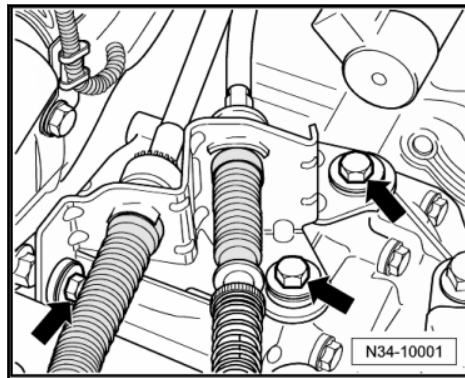


- Push the hose/line assembly or pipe -A- into the bleed-er/clutch slave cylinder to the stop and push the clamp -arrow- downward.

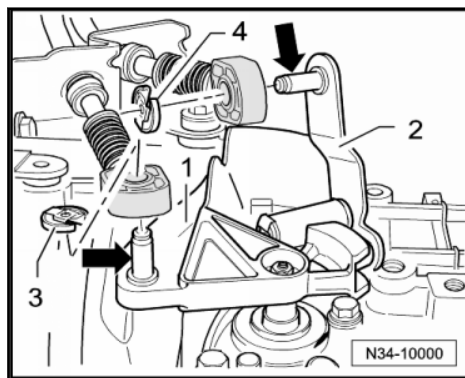


Note

- ◆ *There will be a permanent deformation in the hose after using the Hose Clamps - Up To 25mm -3094-.*
- ◆ *However, the hose is not faulty.*
- ◆ *After removing the Hose Clamps - Up To 25mm -3094-, the hose must be formed back into its original shape.*
- Pull on the line to make sure it is secure.
- Remove the Hose Clamp -3094- from the hose.
- After removing the Hose Clamps - Up To 25mm -3094-, bring the return hose back to its original shape.
- Bleed the clutch mechanism. Refer to [⇒ M2.9 echanism, Bleeding”, page 55](#) .
- Make sure the vacuum hose for the brake system is installed correctly. Refer to [⇒ Brake System; Rep. Gr. 47; Hydraulic System](#).
- Attach the cable bracket to the transmission and tighten the bolts or nuts -arrows- to the tightening specification [⇒ Item 6 \(page 103\)](#) and [⇒ Item 10 \(page 103\)](#) .



- Apply a small amount of grease to the pin -arrow- on the shift lever -1-.



Refer to the ⇒ Electronic Parts Catalog (ETKA) for the grease allocation.

- Slide the shift cable onto the pins -arrow- and secure it with a new lock washer -3-.

Metal Relay Lever

- Apply a small amount of grease to the pin -arrow- on the relay lever -2-.

Refer to the ⇒ Electronic Parts Catalog (ETKA) for the grease allocation.

- Slide the selector cable onto the respective pins -arrow- and secure it with a new lock washer -4-.

Plastic Relay Lever

- Insert the selector cable into the cable retainer.

Continuation for All

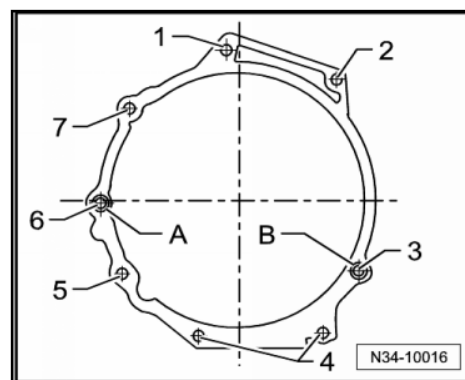
- Adjust the gearshift mechanism. Refer to ⇒ [M1.11 Mechanism, Adjusting](#), page 121 .
- Install the battery tray, battery cover and the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Removing and Installing.
- If removed, install complete air filter housing. Refer to ⇒ Rep. Gr. 23; Diesel Direct Fuel Injection System; Overview - Air Filter.
- Install the engine cover if necessary.
- Connect the battery and follow the steps after the battery is connected. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Disconnecting and Connecting.



- Check the transmission fluid level. Refer to ➤ [F8 fluid, Checking](#), page 252.
- Install the lower section of the left front wheel housing liner. Refer to ➤ Body Exterior; Rep. Gr. 66; Wheel Housing Liner.
- Install the noise insulation. Refer to ➤ Body Exterior; Rep. Gr. 50; Noise Insulation.
- Check the headlamp adjustment if the vehicle has a Left Front Level Control System Sensor -G78-. Refer to ➤ Electrical Equipment; Rep. Gr. 94; Exterior Lamps, Bulbs, Switches.

2.3 Tightening Specifications

Transmission to engine (engine flange face)

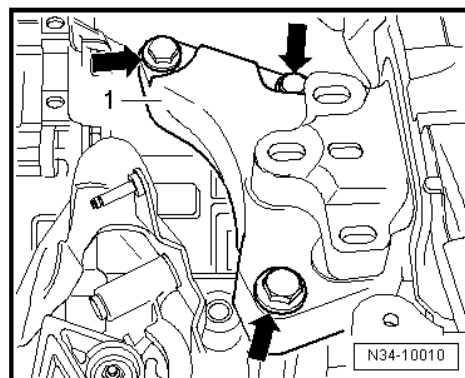


Item	Bolt	Quantity	Nm
1	M12 x 55 ◆ With a short M8 threaded pin	1	80
2	M12 x 55 ◆ With a long M8 threaded pin	1	80
3	M12 x 65	1	80
4	M10 x 50	2	40
5	M10 x 105	1	40
6	M12 x 165 ◆ With a short M8 threaded pin ◆ Also starter to transmission	1	80
7	M12 x 165 ◆ With a short M8 threaded pin ◆ Also starter to transmission	1	80
-	M6 x 8 ◆ Small flywheel cover plate (not present on all engines)	1	10

Item -A- and item -B-: alignment sleeves



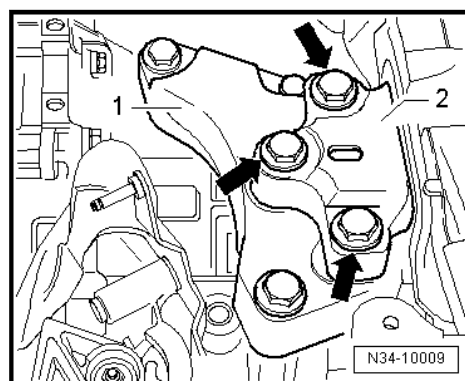
Transmission bracket -1- to transmission



- Replace the bolts.

Tighten the bolts -arrows-: 60 Nm + 90°.

Transmission to body



- Replace the bolts.

Tighten the bolts -arrows-: 60 Nm + 90°.



Note

*Install the engine/transmission mount free of tension. Refer to
⇒ Rep. Gr. 10; Engine, Removing and Installing.*



3 Transmission, Removing and Installing, Jetta from MY 2005 , Golf Wagon from MY 2007 and Golf Wagon from MY 2010, Vehicles with Gasoline Engine and FWD

Remove the transmission. Refer to [⇒ R3.1 removing", page 155](#) .

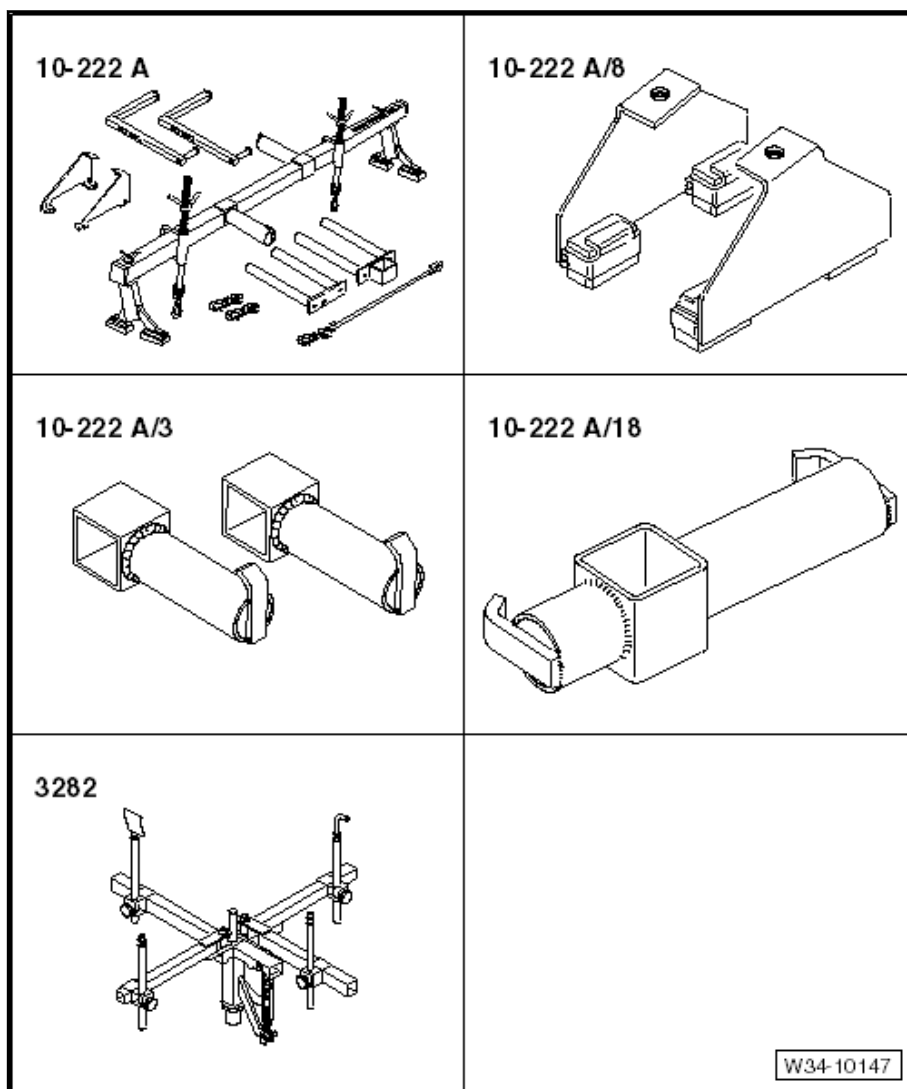
Transmission, transporting. Refer to [⇒ T6 transporting", page 247](#) .

Install the transmission. Refer to [⇒ I3.2 installing", page 171](#) .

Tightening specifications. Refer to [⇒ S3.3 specifications", page 182](#) .

3.1 Transmission, Removing

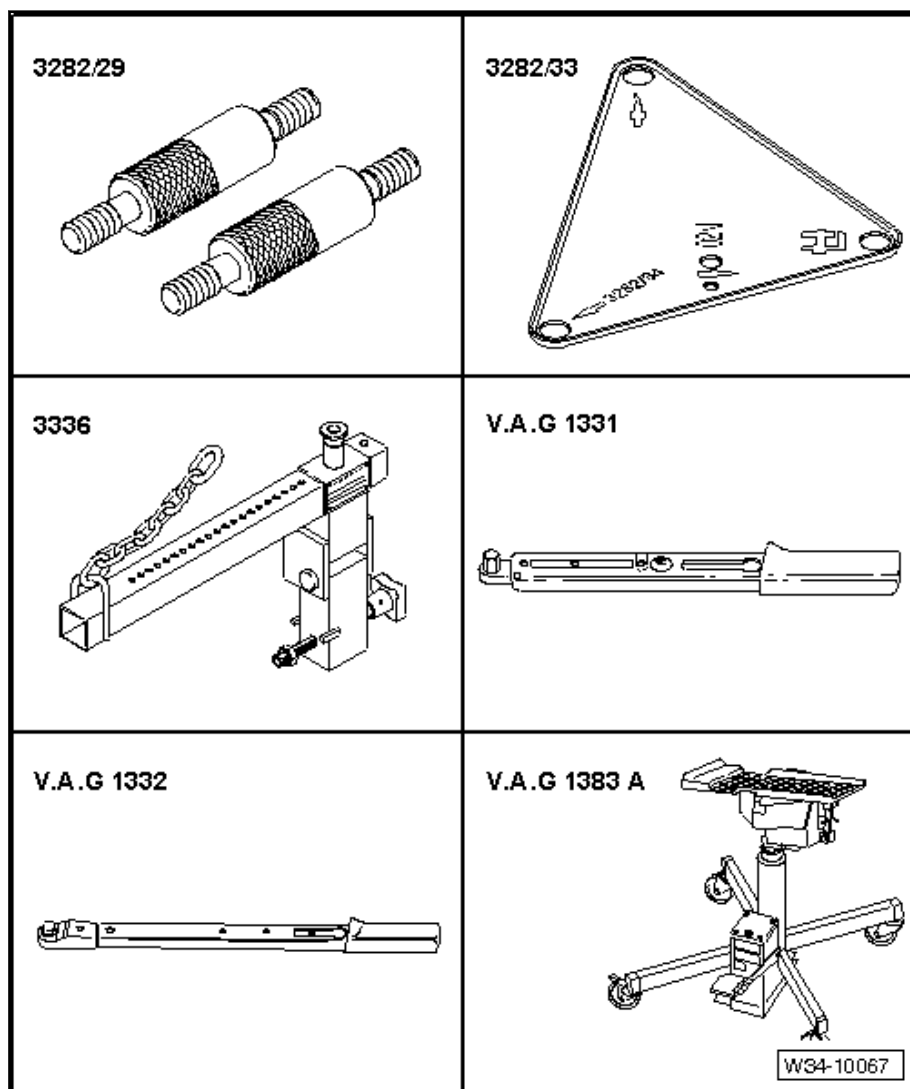
Special tools and workshop equipment required



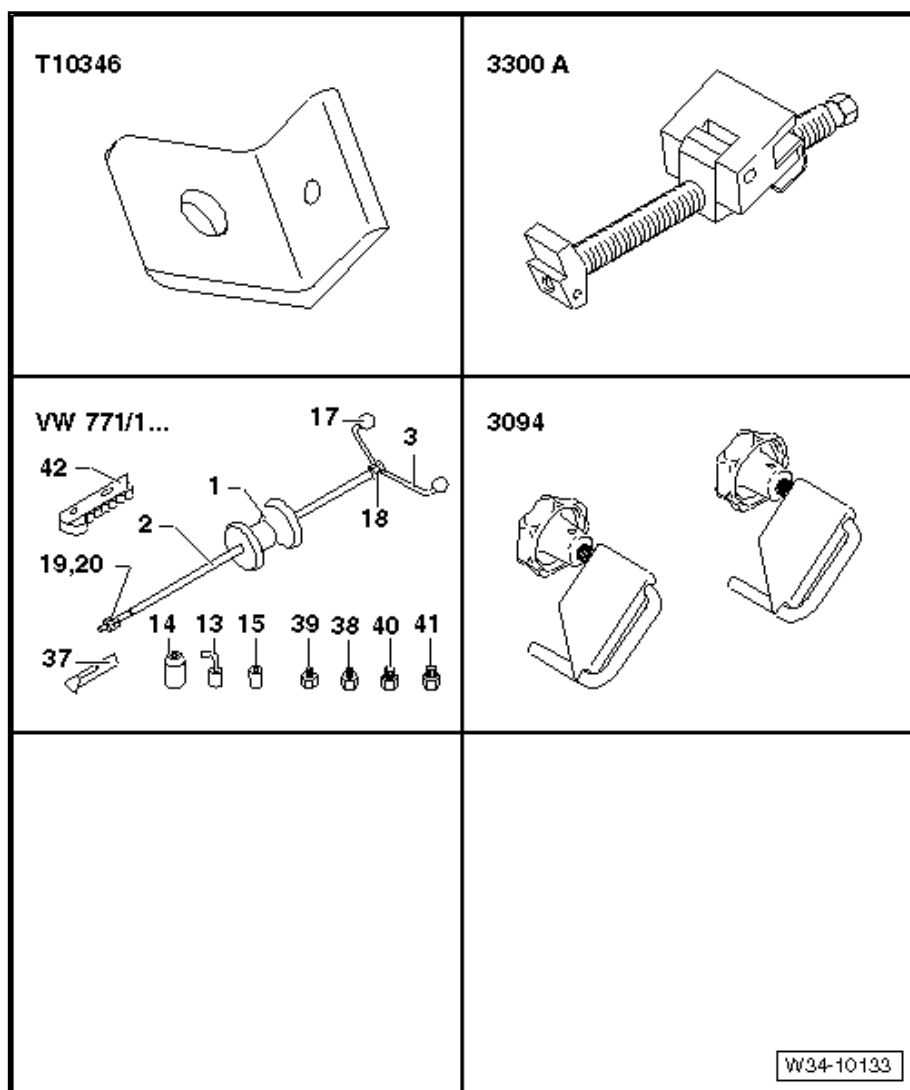
- ◆ Engine Support Bridge -10 - 222 A-
- ◆ Engine Support Bridge - Engine Support Feet -10 - 222 A /8-



- ◆ Engine Support Bridge - Engine Support 3 -10-222 A/3-
- ◆ Engine Support Bridge - Engine Support 18 -10 - 222 A /18-
- ◆ Transmission Support -3282-



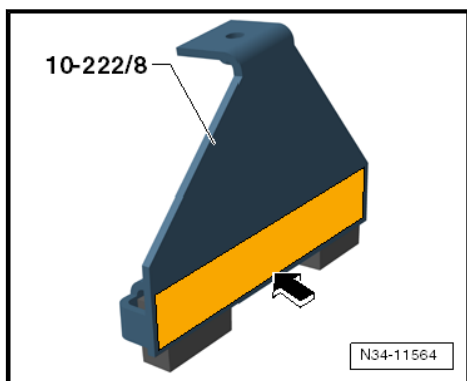
- ◆ Support Elements for transmission (determine when mounting the Mounting Plate on the Transmission Support)
- ◆ Transmission Support - Mounting Plate 33 -3282/33-
- ◆ Transmission Support Jig -3336- for transporting the transmission
- ◆ Torque Wrench 1331 5-50Nm -V.A.G 1331-
- ◆ Torque Wrench 1332 40-200Nm -V.A.G 1332-
- ◆ Engine and Gearbox Jack -VAS 6931-



- ◆ Engine Support Bridge - Gearbox Bracket -T10346- quantity: 2
- ◆ Engine Support Device -3300 A-
- ◆ Slide Hammer Set - Adapter 40 -VW 771/40-
- ◆ Hose Clamps - Up To 25 mm -3094-
- ◆ Lubricating Grease for Clutch Plate Splines -G 000 100-
- ◆ Determine the shift mechanism grease using the ⇒ Electronic Parts Catalog (ETKA).
- ◆ M6 x 20 collar bolt
- ◆ M6 x 80 collar bolt
- ◆ M10 x 20 hex bolt

The Engine Support Bridge -10-222 A- with the Engine Support Bridge - Engine Support Feet -10 - 222 A /8- are mounted on the longitudinal members later in the procedure.

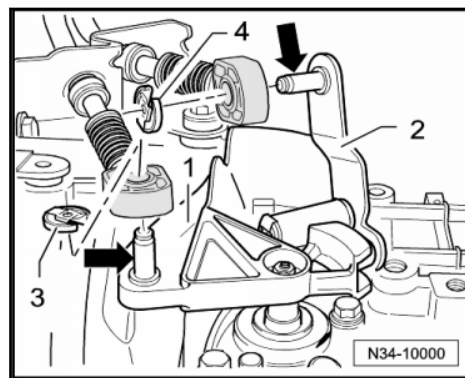
- To protect the edges of the fender, cover the bottom of both Engine Support Bridge - Engine Support Feet -10 - 222 A /8- with cloth tape -arrow-. Refer to the ⇒ Electronic Parts Catalog (ETKA Chemical Materials).



- First check whether a coded radio is installed. If this is the case obtain the anti-theft code.
- Disconnect the battery ground cable. Refer to ➤ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Disconnecting and Connecting.

Later in the procedure, the Engine Support Bridge -10 -222 A- is connected to the engine lifting eyes.

- Remove the engine cover if it is blocking the lifting eyes.
- Remove the air filter housing if it is located near the battery. Refer to ➤ Rep. Gr. 24; Fuel Injection System; Air Filter, Removing and Installing.
- Remove the battery, the battery cover and the battery tray. Refer to ➤ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Removing and Installing.
- Remove the shift cable lock washer -3- from the transmission shift lever -1- and remove the cable from the pin -arrow-.

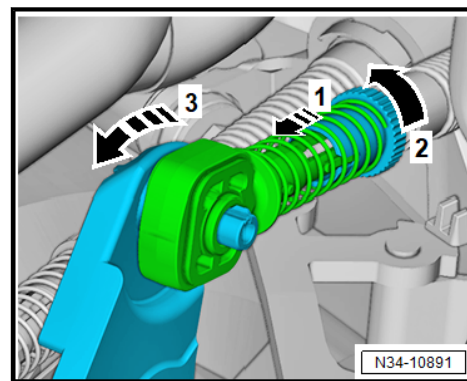


Metal Relay Lever

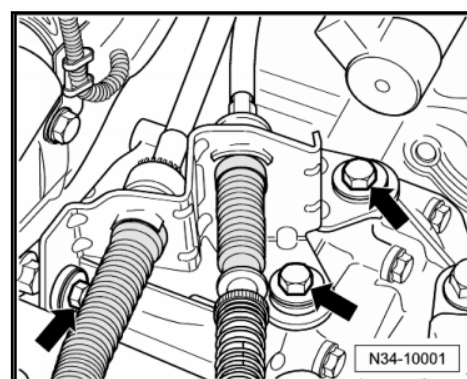
- Remove the selector cable lock washer -4- from the relay lever -2- and remove the cable from the pin -arrow-.

Plastic Relay Lever

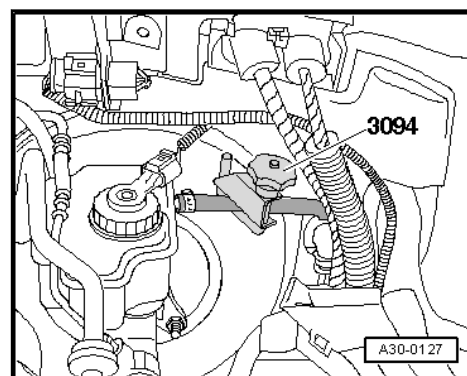
- Remove the cable retainer from the selector cable.



- To avoid damage to the selector cable, the cable retainer must be disconnected from the selector lever before removal.
- Pull the securing mechanism all the way forward in -direction of the arrow 1- and then unlock to the left in -direction of the arrow 2-.
- Press the relay lever forward (-direction of the arrow 3-).
- The relay lever is removed together with the cable retainer later in the procedure.
- Remove the cable bracket from the transmission -arrows-, move it to the side and tie it up.



Vehicles with a pipe between the clutch master and slave cylinders



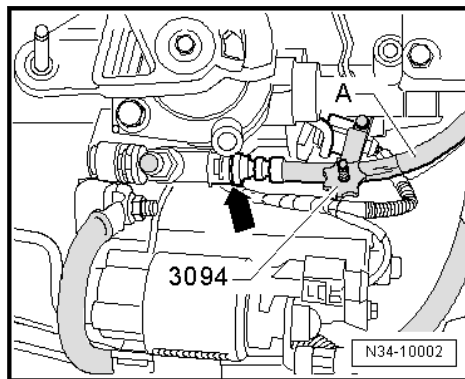
- Clamp the clutch master cylinder hose using a Hose Clamps - Up To 25mm -3094-.



Note

- ◆ *There will be a permanent deformation in the hose after using the Hose Clamps - Up To 25mm -3094-.*
- ◆ *However, the hose is not faulty.*
- ◆ *After removing the Hose Clamps - Up To 25mm -3094-, the hose must be formed back into its original shape.*

Vehicles with a hose/line assembly between the clutch master and slave cylinders



- Clamp off the hose on the hose/line assembly -A- to the clutch slave cylinder using the Hose Clamps - Up To 25mm -3094-.

Continuation for All

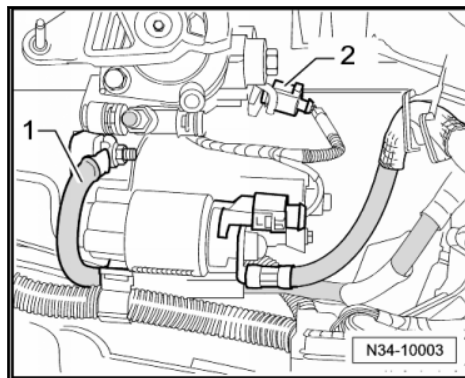
- Pull the clamp -arrow- for the hose/line assembly or pipe out to the stop.
- Remove the hose/line assembly or pipe from the bleed-er/clutch slave cylinder and seal it off.



Caution

Do not press the clutch pedal anymore.

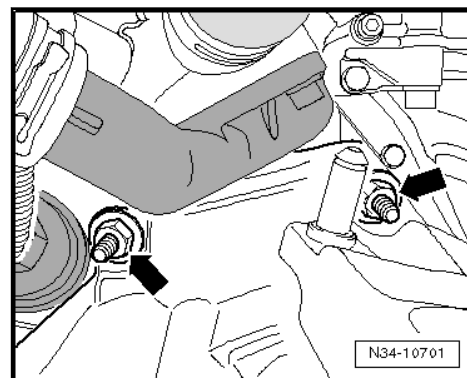
- Remove the ground wire -1- from the top starter bolt.



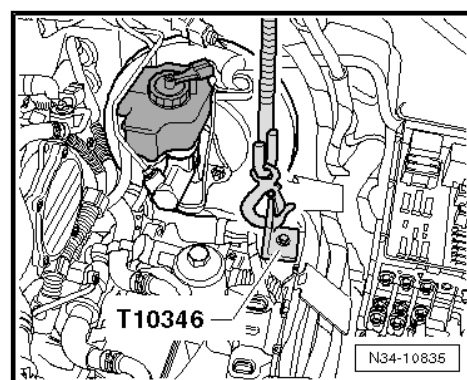
- Disconnect the connector -2- from the Back-Up Lamp Switch -F4-.
- Remove the connector and wire from the starter.



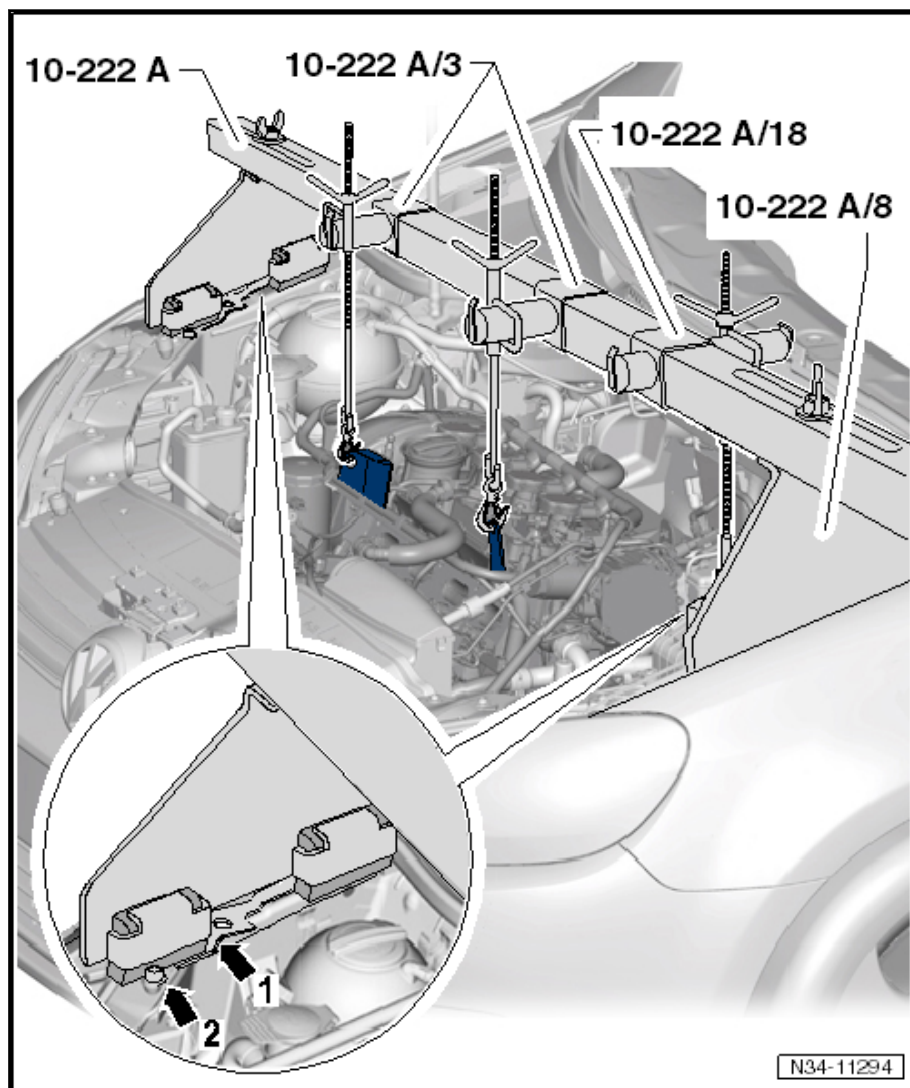
- Remove the upper engine/transmission connecting bolts -arrows-.



- Remove the upper bolt from the starter.

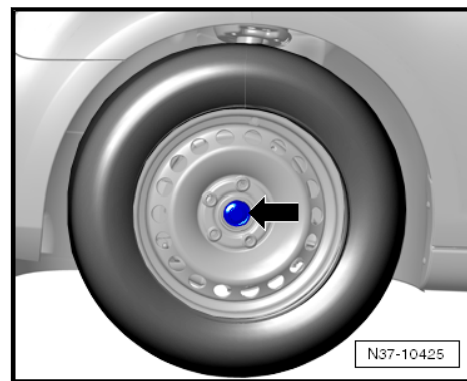


- Install the Engine Support Bridge - Gearbox Bracket - T10346- in the most rear hole out of the three holes in the battery tray.
- To do so, use a M6 x 80 collar bolt or one of the battery tray bolts.
- Remove the foam piece on the upper edge of the left and right fender. Refer to ⇒ Body Exterior; Rep. Gr. 50; Fenders.
- Disconnect any hoses and cables located near the engine lifting eyes for the Engine Support Bridge -10-222 A-.
- Position the Engine Support Bridge -10-222 A- in front of the hood support.

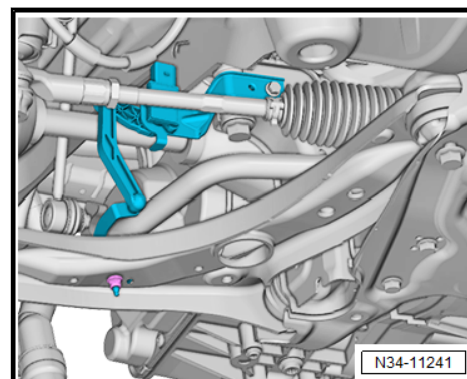


- Use:
 - ◆ Engine Support Bridge - Engine Support 3 -10-222 A/3-
 - ◆ Engine Support Bridge - Engine Support Feet -10 - 222 A /8-
 - ◆ Engine Support Bridge - Engine Support 18 -10 - 222 A /18-
- Position the Engine Support Bridge - Engine Support Feet -10-222 A /8-:
 - On the upper longitudinal members, directly in front of the ridge (-arrow 1-) next to the bolt (-arrow 2-)
- Connect the engine and the Engine Support Bridge - Gear-box Bracket -T10346- to the Engine Support Bridge.
- Lightly pretension the engine/transmission assembly and Engine Support Bridge using the spindles.

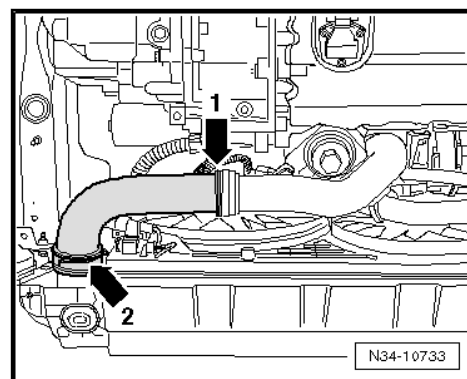
The left drive axle must be removed later in the procedure.



- With the vehicle still resting on its wheels, loosen the left front collar bolt -arrow- a maximum of 90°, otherwise the wheel bearing will become damaged. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axles, Removing and Installing.
- Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 50; Noise Insulation.
- Remove the lower section of the left front wheel housing liner. Refer to ⇒ Body Exterior; Rep. Gr. 66; Wheel Housing Liner.
- Remove the Left Front Level Control System Sensor -G78- from the control arm, if equipped. Refer to ⇒ Rep. Gr. 40; Left Front Level Control System Sensor -G78-, Removing and Installing.

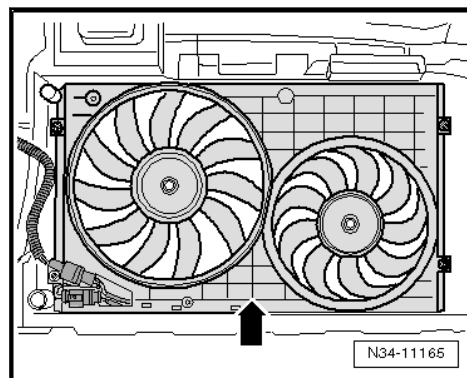


- Remove the bracket from the starter.
- Remove the starter. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Starter; Starter, Removing and Installing.
- Remove the left charge air hose -arrow 1- and -arrow 2- and remove the charge air pipe from the engine. Refer to ⇒ Rep. Gr. 21; Charge Air System with Turbocharger.

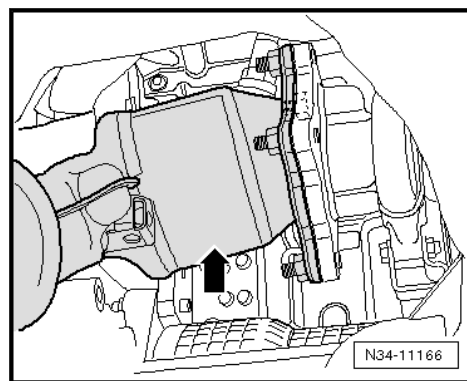




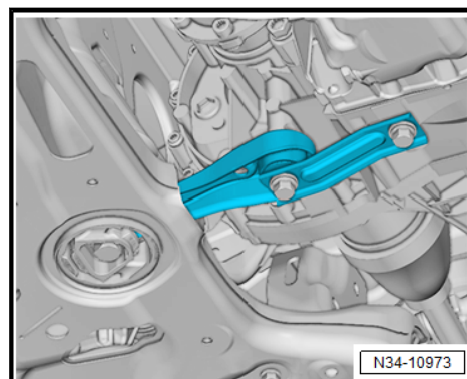
- Remove the right charge air hose. Refer to ⇒ Rep. Gr. 21; Charge Air System with Turbocharger.
- Remove the air shroud -arrow- together with the radiator fans. Refer to ⇒ Rep. Gr. 19; Cooling System Components.



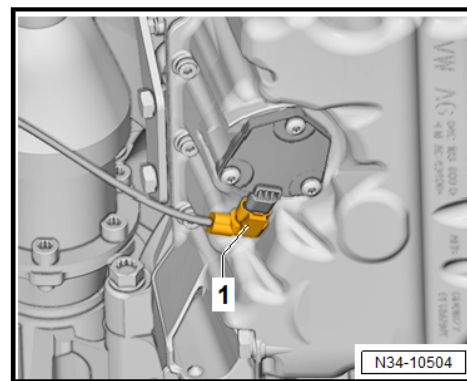
- Remove the front exhaust pipe from the turbocharger (-arrow-). Refer to ⇒ Rep. Gr. 26; Exhaust System or ⇒ Rep. Gr. 26; Exhaust System Components and secure it.



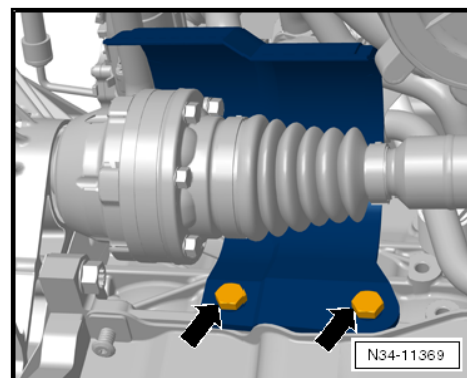
- Remove the pendulum support.



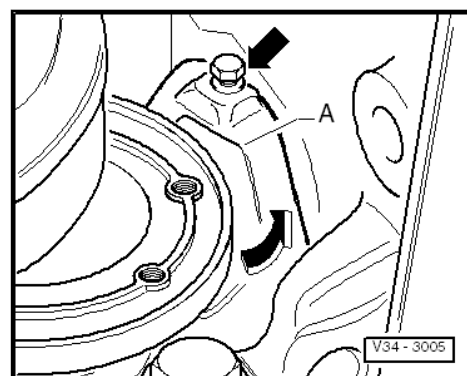
- Disconnect the connector -1- from the Oil Level Thermal Sensor -G266-.



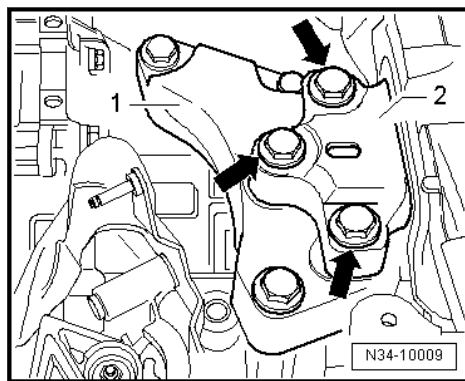
- Remove the left coupling rod from the stabilizer bar and move it to the side. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Front Suspension, Servicing.
- Remove the left drive axle. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axles, Removing and Installing.
- If equipped, remove the drive axle heat shield -arrows-. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Shaft Servicing - Drive Shaft Overview.



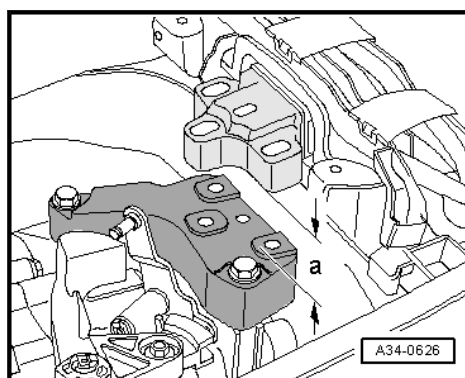
- Remove the right drive axle from the transmission and tie it up. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axles, Removing and Installing.
- If equipped, remove the small cover plate -A- for the flywheel -arrows-.



- Remove the hex bolts -arrows- on the left assembly mount -2- from the bracket -1-.



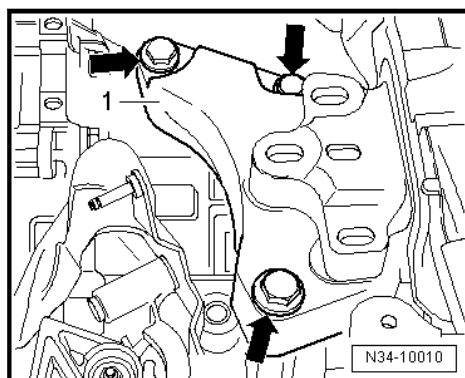
- Lower the transmission by adjusting the spindles, which are attached to the engine, to dimension -a- approximately 40 mm.



Note

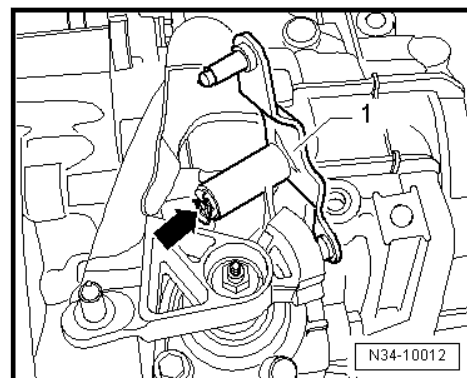
When moving the engine/transmission assembly, pay attention to the connection lines, hoses and radiator.

- Remove the bracket -1- from the transmission -arrows-.





Metal Relay Lever



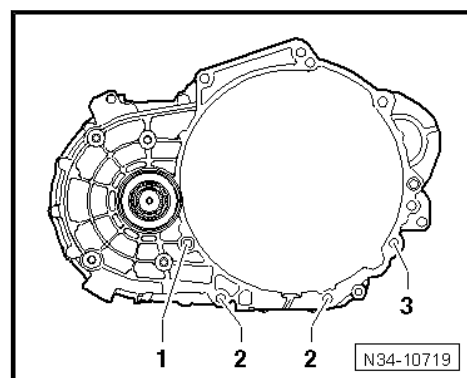
- Remove the lock washer -arrow- from the relay lever -1- and then remove the relay lever.

Plastic Relay Lever

- Remove the relay lever with the cable retainer. Refer to ➤ [R1.8 relay Lever”, page 108](#) .

Continuation for All

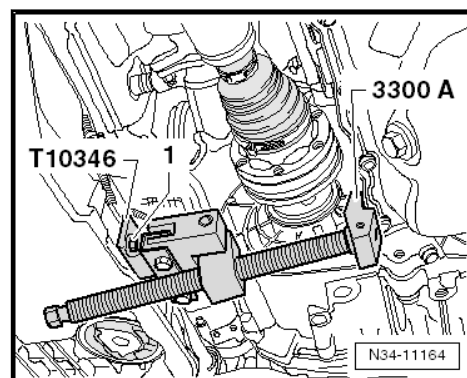
- Remove the gearshift lever from the gearshift shaft.
- Remove the engine/transmission connecting bolt -1-.



Note

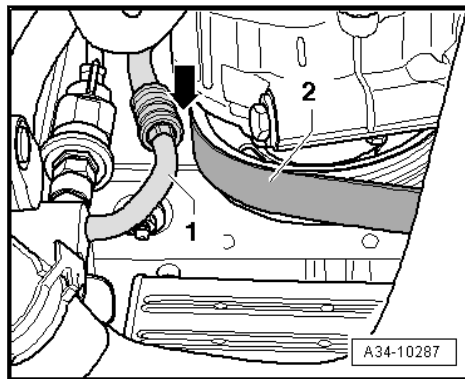
Loosen the engine/transmission connecting bolt -3- and leave it in so that it is hand-tight.

- Tighten the Engine Support Bridge - Gearbox Bracket - T10346- with the bolt -1- in the left threaded hole in the subframe.





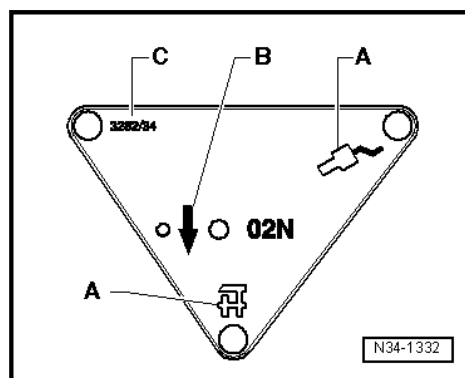
- Install the Engine Support Bridge - Gearbox Bracket - T10346- in the same angled position as the engine.
- 1- = M6 x 20 collar bolt
- Secure the Engine Support Device -3300A- to the Engine Support Bridge - Gearbox Bracket -T10346-.
- Push the engine forward using the spindle on the Engine Support Device -3300 A-. Note the following when doing this:



- The A/C compressor -2- must not touch the refrigerant line -1- -arrow-.
- The generator must not contact the refrigerant line.
- The pressure pipe must not contact the radiator.

Set up the Transmission Support -3282- with the Transmission Support - Mounting Plate 33 -3282/33- to remove transmission "02Q".

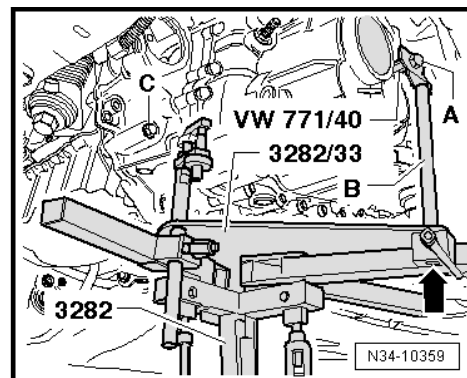
- Insert the Transmission Support -3282- into the Engine and Gearbox Jack -VAS 6931-.
- Align the arms of the Transmission Support so that they align with the holes in the Adjustment Plate.
- Install the Mounting Elements -A- as shown on the Adjusting Plate.



- Install the Transmission Support - Pins 29 -3282/29- instead of the Mounting Element -C-.
- Position the Engine and Gearbox Jack -VAS 6931- under the vehicle. The arrow symbol -B- on the Adjusting Plate points in the direction of travel.
- Align the Adjustment Plate so that it is parallel to the transmission.



- Secure the Slide Hammer Set - Adapter 40 -VW 771/40- inside the threaded hole in the transmission housing as shown.

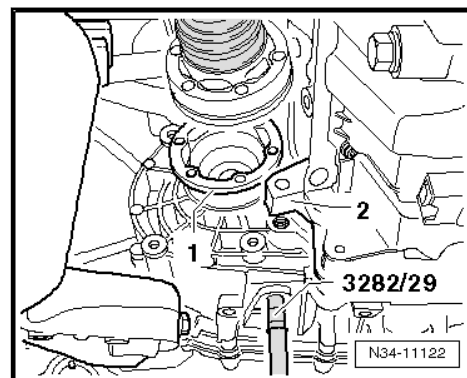


- Install the Transmission Support - Pins 29 -3282/29- into the hole on the transmission for the pendulum support bolt.
- Secure the transmission on the Transmission Support -3282- with an M10 x 20 bolt -A-.

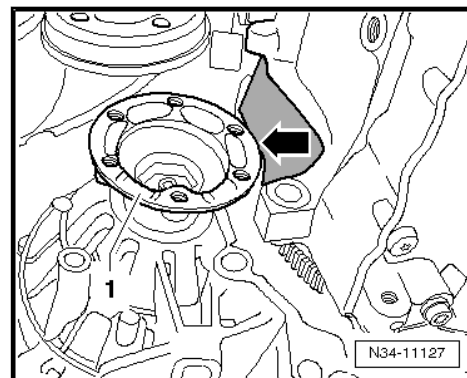
The drift -B- must be flush at the bottom with the guide on the Transmission Support -3282- -arrow-.

- Remove the connecting bolt -C- and the lower connecting bolts.
- Separate the transmission from the engine (alignment sleeves).

The right flange shaft -1- must be guided over the engine eye -2-.

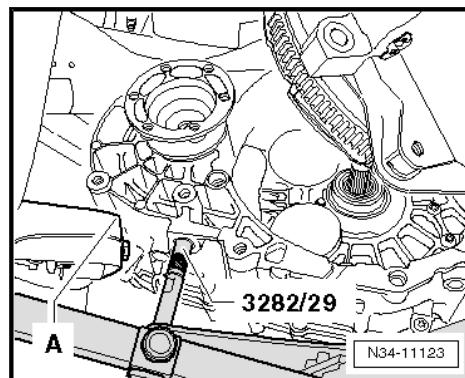


Then the right flange shaft -1- must be guided past the intermediate plate opening -arrow- and past the flywheel.

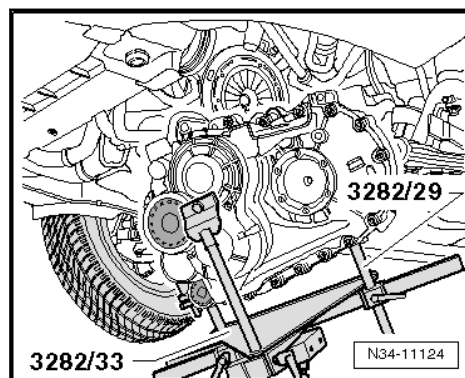




- Move the transmission in the area of the differential with the spindles of the Transmission Support -3282- into an angled position.
- The differential, near the transmission, must face upward.
- Guide the transmission and the differential over the sub-frame -A- and swing it out.
- If necessary, turn the transmission further upward near the differential using the spindles of the Transmission Mount -3282-.



- Pivot the transmission further and carefully lower it.



Note

Pay attention to all of the lines when lowering the transmission.

3.2 Transmission, Installing

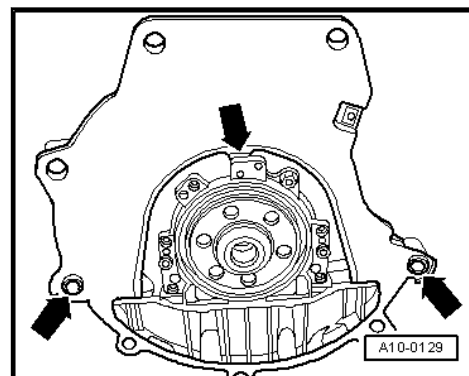


Note

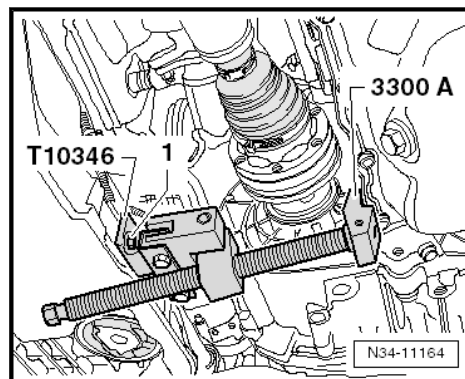
- ◆ Refer to "Transmission, Removing" to get a list of the special tools needed ➔ [R3.1 removing", page 155](#).
 - ◆ Replace the self-locking nuts and bolts.
 - ◆ Replace any bolts that were tightened with an additional turn.
 - ◆ Install any cable ties that were loosened or cut off during removal at their same location.
 - ◆ Clean the input shaft splines and the hub splines (on a used clutch plate), remove any corrosion and only apply a very thin layer of Lubricating Grease for Clutch Plate Splines -G 000 100- on the splines. Then move the clutch plate back and forth on the input shaft until the hub moves freely on the shaft. Excess grease must be removed.
- If the transmission is replaced, transfer the shift lever and the relay lever.
 - Clean any locking compound residue from all threaded holes using a tap.
 - Check whether there are centering sleeves for the engine/transmission in the cylinder block; install if necessary.

If the alignment sleeves are missing, it will be difficult to shift, there will be clutch problems and the transmission may make noises (loose rattling).

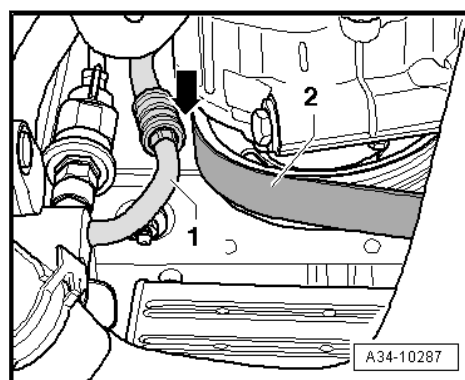
- Make sure the intermediate plate is engaged on the sealing flange and pushed onto the alignment sleeves -arrows-.



- Check the release bearing for wear. Replace the clutch slave cylinder with release bearing if necessary. Refer to ➔ [S3.2 Slave Cylinder with Release Bearing, Removing and Installing", page 60](#).
- Tighten the Engine Support Bridge - Gearbox Bracket - T10346- with the bolt -1- in the left threaded hole in the subframe.



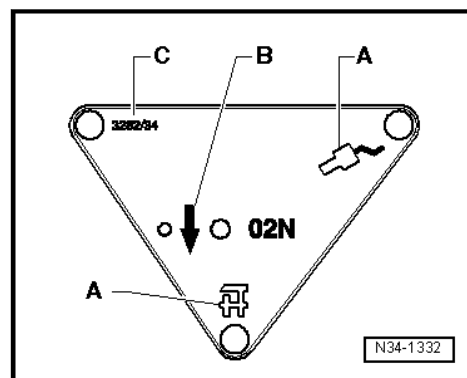
- Install the Engine Support Bridge - Gearbox Bracket - T10346- in the same angled position as the engine.
- 1- = M6 x 20 collar bolt
- Secure the Engine Support Device -3300A- to the Engine Support Bridge - Gearbox Bracket -T10346-.
- Push the engine forward using the spindle on the Engine Support Device -3300 A-. Note the following when doing this:



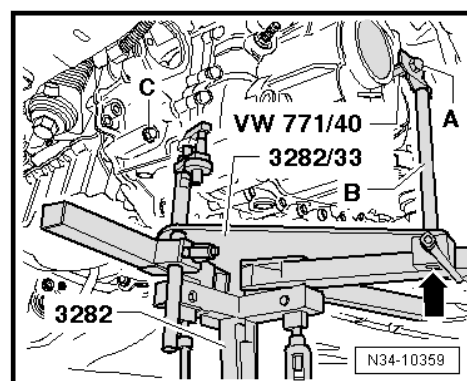
- The A/C compressor -2- must not touch the refrigerant line -1- -arrow-.
- The generator must not contact the refrigerant line.
- The pressure pipe must not contact the radiator.

Align the Transmission Support -3282- with the Transmission Support - Mounting Plate 33 -3282/33- in order to install the "02Q" transmission.

- Align the arms of the Transmission Support so that they align with the holes in the Adjustment Plate.
- Install the Mounting Elements -A- as shown on the Adjusting Plate.



- Install the Transmission Support - Pins 29 -3282/29- instead of the Mounting Element -C-.
- Place the transmission on the Engine and Gearbox Jack -VAS 6931-.
- Align the Adjusting Plate and transmission so that they are parallel to each other.
- Install the Transmission Support - Pins 29 -3282/29- into the hole on the transmission for the pendulum support bolt.
- Secure the Slide Hammer Set - Adapter 40 -VW 771/40- inside the threaded hole in the transmission housing as shown.



- Secure the transmission on the Transmission Support -3282- with an M10 x 20 bolt -A-.

The drift -B- must be flush at the bottom with the guide on the Transmission Support -3282- -arrow-.

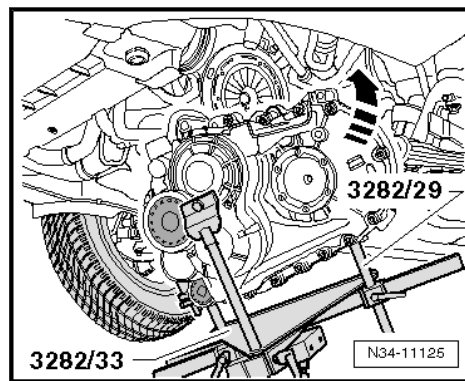
- Position the Engine and Gearbox Jack -VAS 6931- under the vehicle. The arrow on the adjusting plate points in the direction of travel.



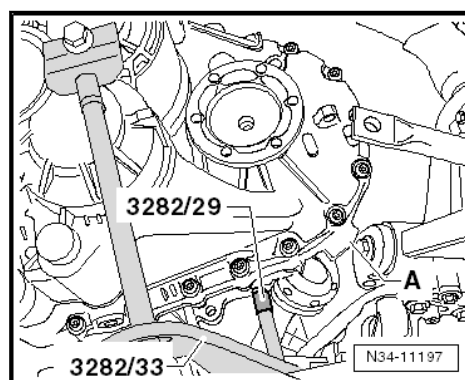
Note

Pay attention to all of the lines when installing the transmission.

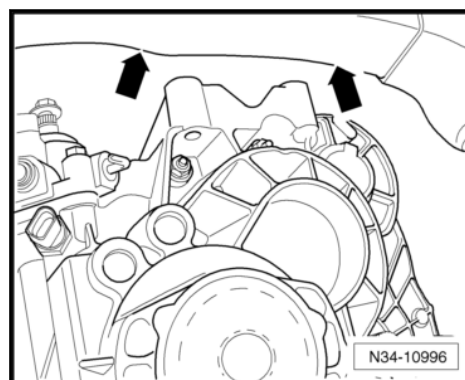
- Using the spindles of the Transmission Support -3282-, adjust the transmission so that the differential area is rotated in -direction of the arrow- upward.



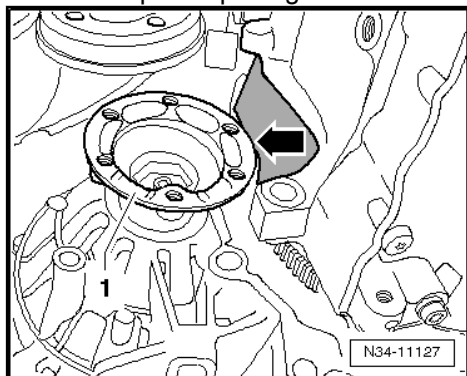
- Lift the transmission carefully.
- Guide the transmission and differential -A- over the sub-frame.



- Pay attention to the longitudinal member -arrows-.

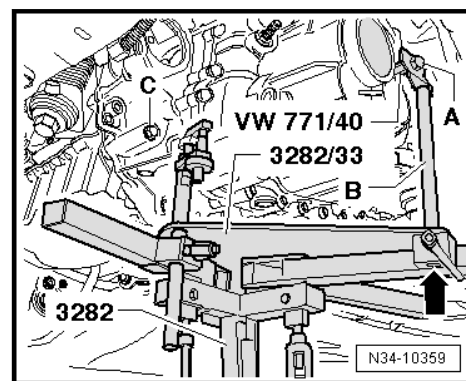


- Pivot the back of the transmission toward the subframe.
- Then the right flange shaft -1- must be guided past the fly-wheel and past the intermediate plate opening -arrow-.

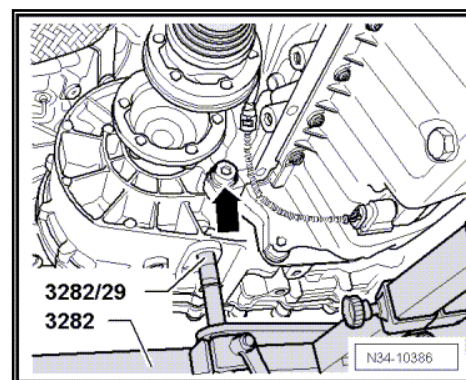




- Turn the transmission to its installation position using the spindles of the Transmission Support -3282-.
- Align the transmission to the engine (alignment sleeves) and insert it.
- Install the engine/transmission connecting bolt -C- and tighten to tightening specification. Refer to ➤ [S3.3 specifications", page 182](#) .



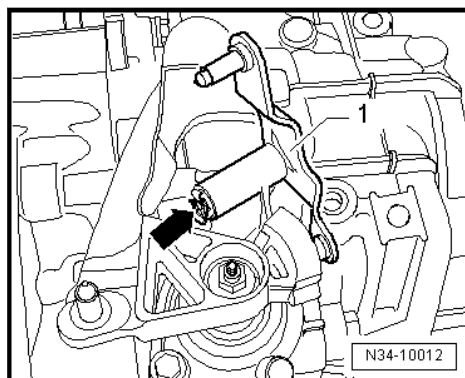
- Install the engine/transmission connecting bolt -arrow- and tighten it to the tightening specification. Refer to ➤ [S3.3 specifications", page 182](#) .



- Remove the Engine Support Device -3300 A- and Engine Support Bridge - Gearbox Bracket - T10346-.
- Install the lower engine/transmission connecting bolts and tighten to tightening specification. Refer to ➤ [S3.3 specifications", page 182](#) .
- After transmission is bolted to the bottom of the engine, remove the Transmission Support -3282- from the transmission.
- Install the upper engine/transmission connecting bolts and tighten them to the tightening specification. Refer to ➤ [S3.3 specifications", page 182](#) .
- Attach the shift lever to the transmission gearshift shaft (refer to ➤ [Fig. "Shift Lever, Installing", page 105](#)) and tighten the hex nut to the tightening specification ➤ [Item 17 \(page 104\)](#) .



Metal Relay Lever



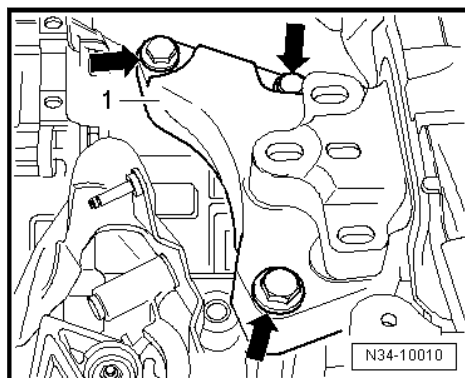
- Insert the relay lever -1- and clip in the lock washer -arrow-.

Plastic Relay Lever

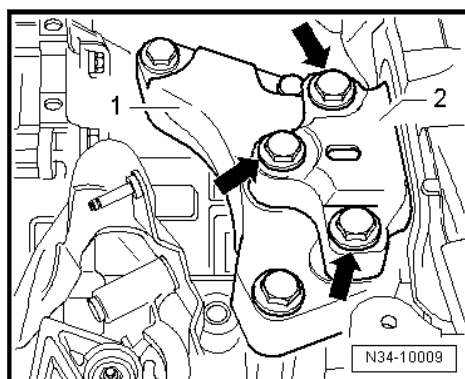
- Install the relay lever with the cable retainer. Refer to ➤ [R1.8 elay Lever](#), page 108 .

Continuation for All

- Attach the bracket -1- with the new hex bolts to the transmission -arrows- and tighten them to the tightening specification. Refer to ➤ [S3.3 pecifications](#), page 182 .



- Align the engine/transmission in its installation position. To do so, lift it until the bracket -1- lies all the way against the left assembly mount -2-



- Install the new hex bolts -arrows- for the left assembly mount -2- in the bracket -1- and tighten to the tightening position. Refer to ➤ [S3.3 pecifications](#), page 182 .



Note

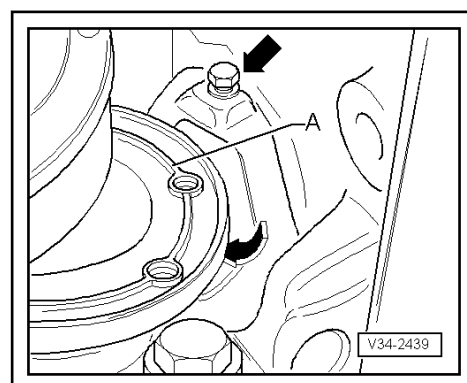
Install the engine/transmission mount free of tension. Refer to
⇒ Rep. Gr. 10; Engine, Removing and Installing.



WARNING

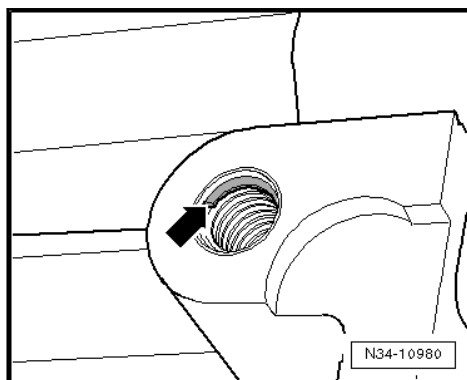
Only remove the Engine Support Bridge -10 - 222 A- if all of the bolts for the assembly mount are tightened to the tightening specification.

- If equipped, install the small cover plate -A- for the flywheel -arrows-. Refer to ⇒ [S3.3 specifications](#), page 182 .



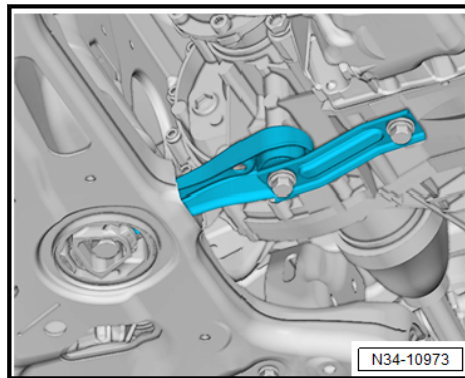
Note

- ◆ There are threaded inserts (for example "Heli Coil") in the pendulum support fastening holes.
- ◆ Identifying feature: there is a collar on the first thread -arrow-.

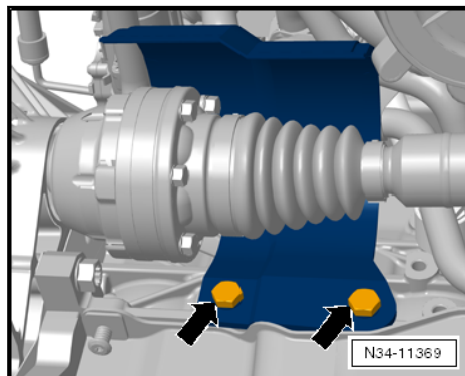


Observe the correct bolts and tightening specifications. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Overview - Subframe, Stabilizer Bar and Control Arms.

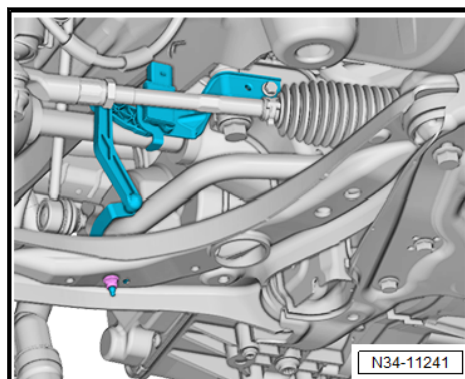
- Install the pendulum support. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Subframe, Overview - Stabilizer Bar and Control Arms.



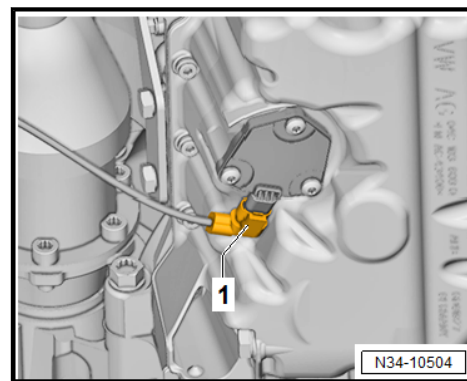
- Assemble the exhaust system. Refer to ⇒ Rep. Gr. 26; Exhaust System or ⇒ Rep. Gr. 26; Exhaust System Components.
- Install the drive axles. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axle, Removing and Installing.
- If equipped, install the drive axle heat shield -arrows-. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Shaft Servicing - Drive Shaft Overview.



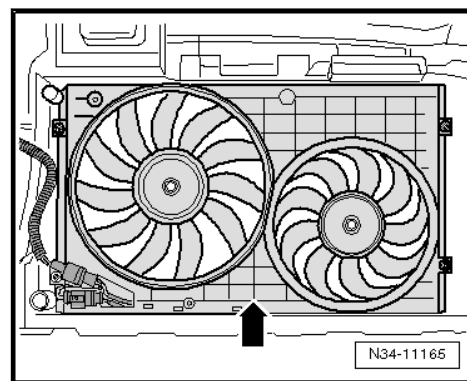
- Install the left coupling rod. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Front Suspension, Servicing.
- Install the Left Front Level Control System Sensor -G78- in the control arm, if equipped. Refer to ⇒ Rep. Gr. 40; Left Front Level Control System Sensor -G78-, Removing and Installing.



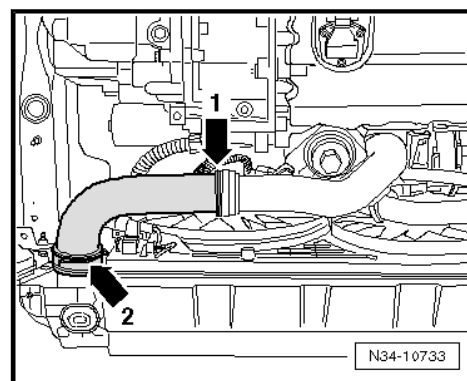
- Connect the connector -1- to the Oil Level Thermal Sensor -G266-.



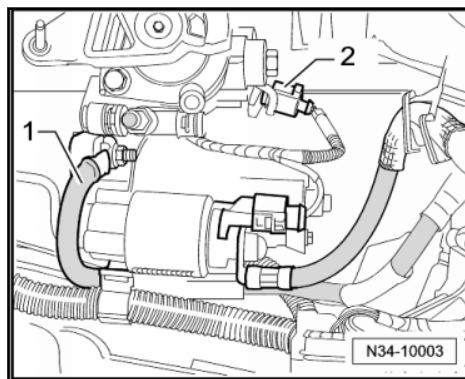
- Install the air shroud -arrow- and the radiator fans. Refer to ⇒ Rep. Gr. 19; Cooling System Components.



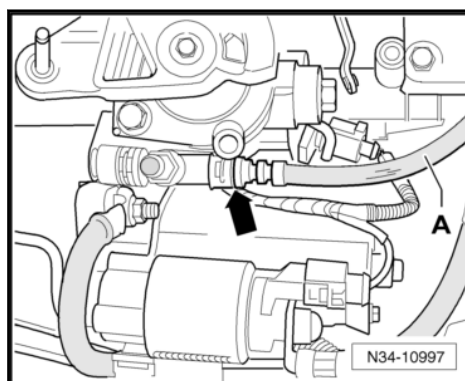
- Install the charge air hoses -arrow 1- and -arrow 2- and then connect the charge air pipe to the engine. Refer to ⇒ Rep. Gr. 21; Charge Air System with Turbocharger.



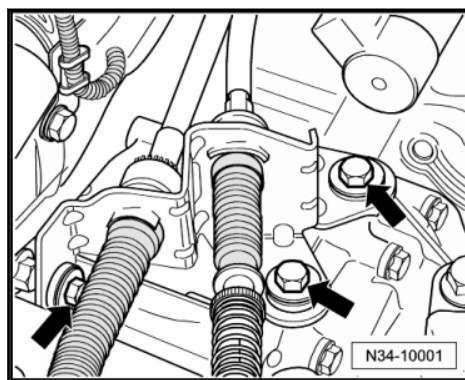
- Then insert the starter and secure it with the lower bolt. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Starter; Starter, Removing and Installing.
- Attach the bracket for the wires to the lower starter bolt.
- Install the upper starter bolt and connect the connectors and wires to the starter. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Starter; Starter, Removing and Installing.
- Secure the ground wire -1- to the upper starter bolt.



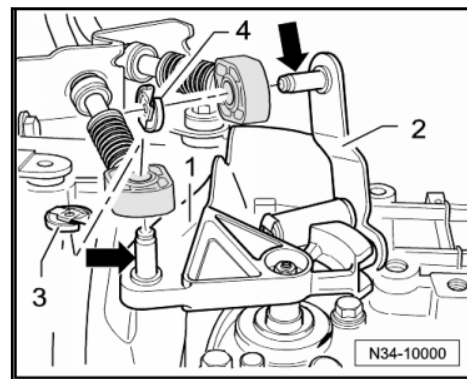
- Connect the connector -2- to the Back-Up Lamp Switch -F4-.
- Push the hose/line assembly or pipe -A- into the bleed-/clutch slave cylinder to the stop and push the clamp -arrow- downward.



- Pull on the line to make sure it is secure.
- Remove the Hose Clamp -3094- from the hose.
- After removing the Hose Clamps - Up To 25mm -3094-, bring the return hose back to its original shape.
- Bleed the clutch mechanism. Refer to ➤ [M2.9 echanism, Bleeding](#), page 55 .
- Make sure the vacuum hose for the brake system is installed correctly. Refer to ➤ Brake System; Rep. Gr. 47; Hydraulic System.
- Attach the cable bracket to the transmission and tighten the bolts or nuts -arrows- to the tightening specification ➤ [Item 6 \(page 103\)](#) and ➤ [Item 10 \(page 103\)](#) .



- Apply a small amount of grease to the pin -arrow- on the shift lever -1-.



Refer to the ⇒ Electronic Parts Catalog (ETKA) for the grease allocation.

- Slide the shift cable onto the pins -arrow- and secure it with a new lock washer -3-.

Metal Relay Lever

- Apply a small amount of grease to the pin -arrow- on the relay lever -2-.

Refer to the ⇒ Electronic Parts Catalog (ETKA) for the grease allocation.

- Slide the selector cable onto the respective pins -arrow- and secure it with a new lock washer -4-.

Plastic Relay Lever

- Insert the selector cable into the cable retainer.

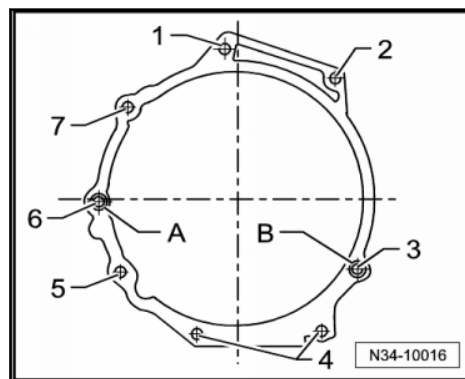
Continuation for All

- Adjust the gearshift mechanism. Refer to ⇒ [M1.11 echan-ism, Adjusting](#), page 121 .
- Install the battery tray, battery cover and the battery. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Removing and Installing.
- Install the air filter housing, if it was removed earlier. Refer to ⇒ Rep. Gr. 24; Fuel Injection System; Air Filter, Removing and Installing.
- Install the plenum chamber cover and seal. Refer to ⇒ Body Exterior; Rep. Gr. 64; Overview - Plenum Chamber Cover.
- Attach the foam pieces to the upper edges on the left and right fenders. Refer to ⇒ Body Exterior; Rep. Gr. 50; Fenders.
- Install the engine cover if necessary.
- Connect the battery and follow the steps after the battery is connected. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Disconnecting and Connecting.
- Check the transmission fluid level. Refer to ⇒ [F8 fluid, Checking](#), page 252 .
- Install the lower section of the left front wheel housing liner. Refer to ⇒ Body Exterior; Rep. Gr. 66; Wheel Housing Liner.
- Install the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 50; Noise Insulation.
- Check the headlamp adjustment if the vehicle has a Left Front Level Control System Sensor -G78-. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Exterior Lamps, Bulbs, Switches.



3.3 Tightening Specifications

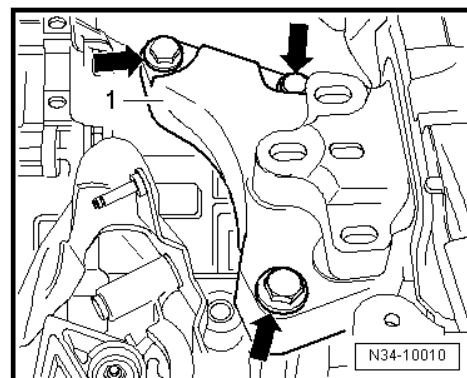
Transmission to engine (engine flange face)



Item	Bolt	Quantity	Nm
1	M12 x 55 ◆ With a short M8 threaded pin	1	80
2	M12 x 55 ◆ With a long M8 threaded pin	1	80
3	M12 x 65	1	80
4	M10 x 50	2	40
5	M10 x 105	1	40
6	M12 x 165 ◆ With a short M8 threaded pin ◆ Also starter to transmission	1	80
7	M12 x 165 ◆ With a short M8 threaded pin ◆ Also starter to transmission	1	80
-	M6 x 8 ◆ Small flywheel cover plate (not present on all engines)	1	10

Item -A- and item -B-: alignment sleeves

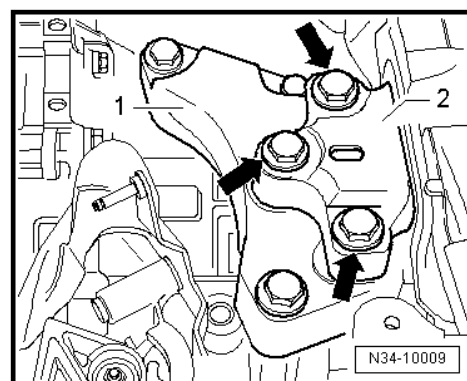
Transmission bracket -1- to transmission



- Replace the bolts.

Tighten the bolts -arrows-: 60 Nm + 90°.

Transmission to body



- Replace the bolts.

Tighten the bolts -arrows-: 60 Nm + 90°.



Note

*Install the engine/transmission mount free of tension. Refer to
⇒ Rep. Gr. 10; Engine, Removing and Installing.*



4 Transmission, Removing and Installing, Jetta from MY 2011, Diesel and Gasoline

Remove the transmission. Refer to [⇒ R4.1 removing", page 184](#).

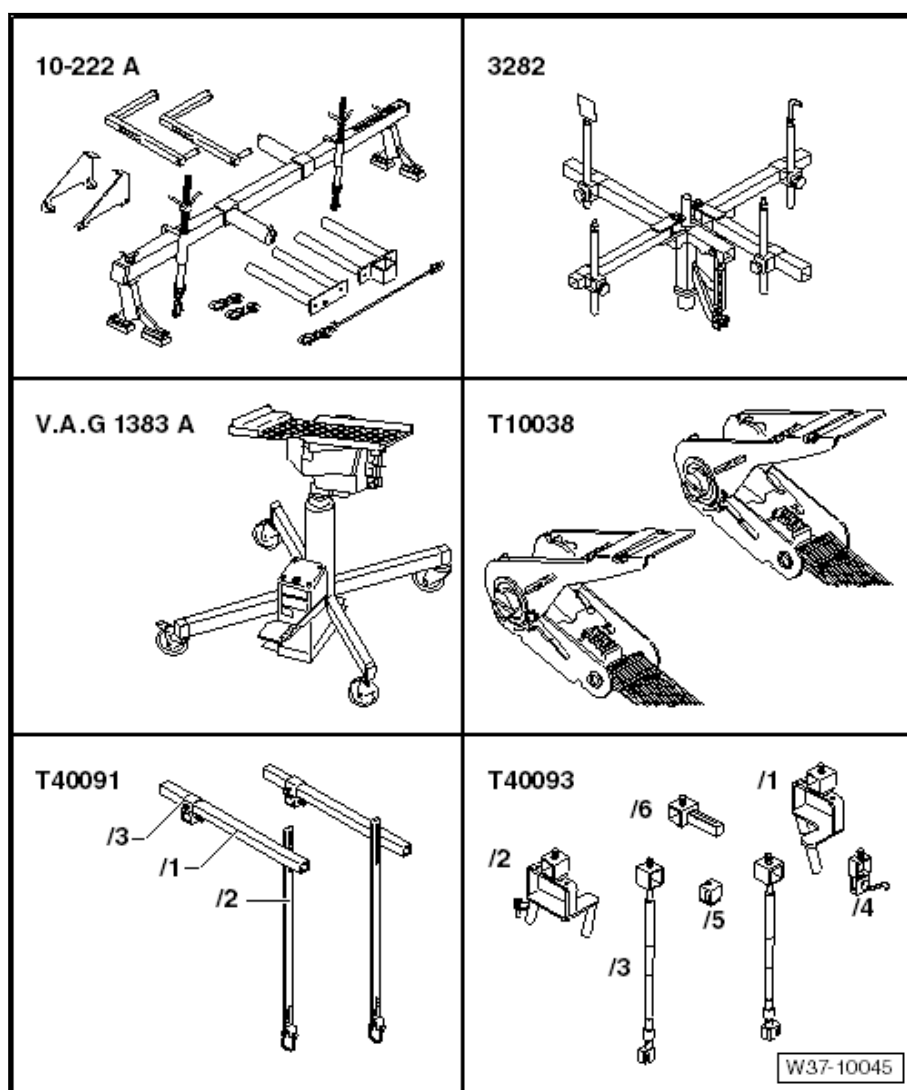
Transmission, transporting. Refer to [⇒ T6 ransporting", page 247](#).

Install the transmission. Refer to [⇒ I4.2 nstalling", page 200](#).

Tightening specifications. Refer to [⇒ S4.3 pecifications", page 211](#).

4.1 Transmission, Removing

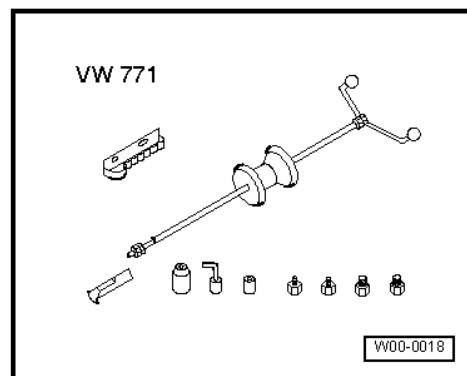
Special tools and workshop equipment required



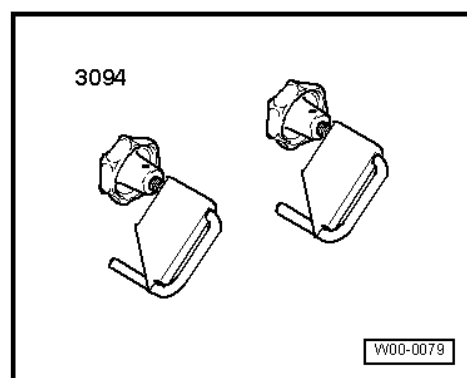
- ◆ Engine Support Bridge -10 - 222 A-
- ◆ Transmission Support -3282-
- ◆ Engine and Gearbox Jack -VAS 6931-
- ◆ Tensioning Strap -T10038-



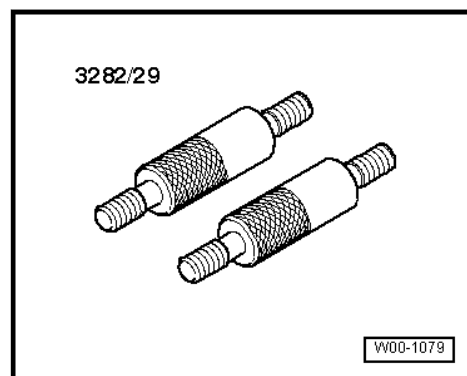
- ◆ Engine Support - Basic Set -T40091-
- ◆ Engine Support - Supplement Kit -T40093A-
- ◆ Slide Hammer Set - Adapter 40 -VW 771/40- from the Slide Hammer Set -VW 771-



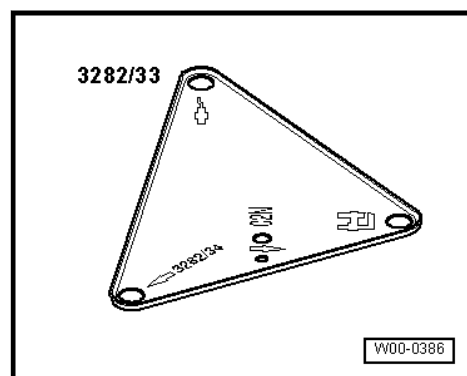
- ◆ Hose Clamps - Up To 25 mm -3094-



- ◆ Transmission Support - Pins 29 -3282/29-



- ◆ Transmission Support - Mounting Plate 33 -3282/33-



- ◆ Support Elements for transmission (determine when mounting the Mounting Plate on the Transmission Support)
- ◆ Lubricating Grease for Clutch Plate Splines -G 000 100-

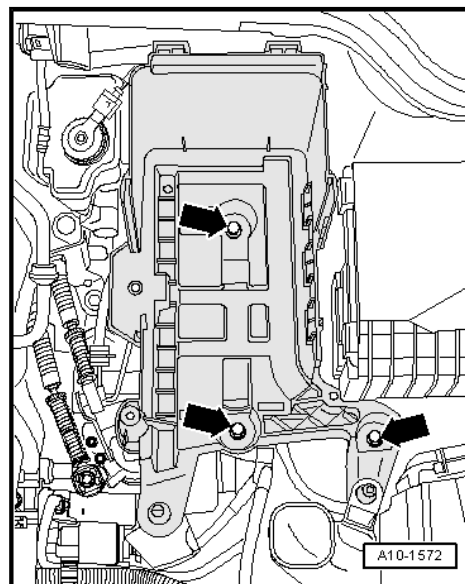


- ◆ Determine the shift mechanism grease using the ⇒ Electronic Parts Catalog (ETKA).

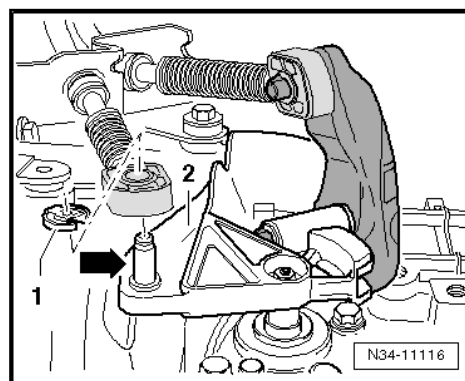
- ◆ M10 x 20 hex bolt

Removing

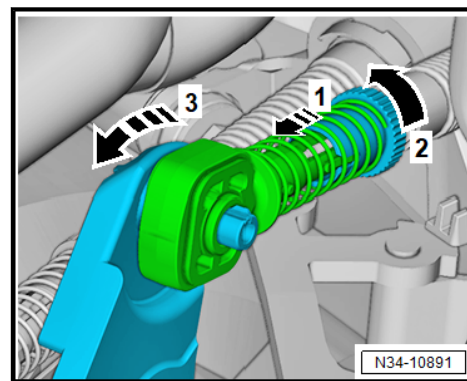
- Check if a coded radio is installed. If this is the case obtain the anti-theft code.
- Disconnect the battery ground cable. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Disconnecting and Connecting.
- Remove the engine cover. Refer to ⇒ Rep. Gr. 15; Cylinder Head; Engine Cover, Removing and Installing.
- Remove the complete air filter housing. Refer to ⇒ Rep. Gr. 23; Diesel Direct Injection System; Overview - Air Filter or ⇒ Rep. Gr. 24; Fuel Injection System; Air Filter, Removing and Installing.
- Remove the battery and battery tray. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Removing and Installing.



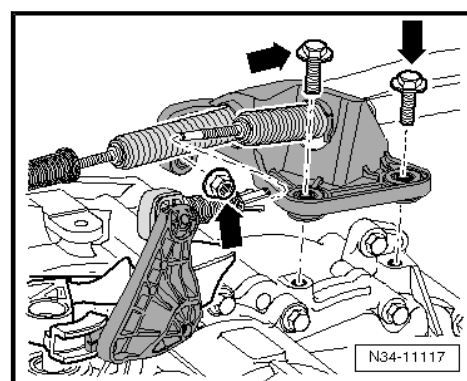
- Remove the shift cable lock washer -1- from the shift lever -2- and remove the cable from the pin -arrow-.



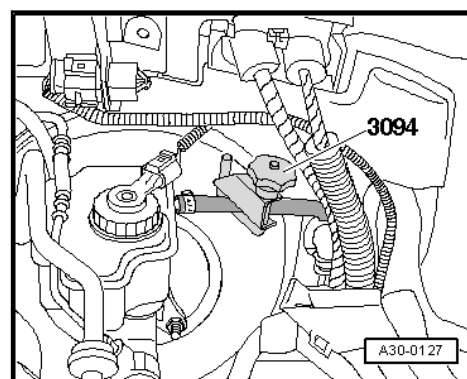
- Remove the cable retainer from the selector cable.



- To avoid damage to the selector cable, the cable retainer must be disconnected from the selector lever before removal.
- Pull the securing mechanism all the way forward in -direction of the arrow 1- and then unlock to the left in -direction of the arrow 2-.
- Press the relay lever forward (-direction of the arrow 3-).
- The relay lever is removed together with the cable retainer later in the procedure.
- Remove the cable bracket from the transmission -arrows-, move it to the side and tie it up.



Vehicles with a pipe between the clutch master and slave cylinders



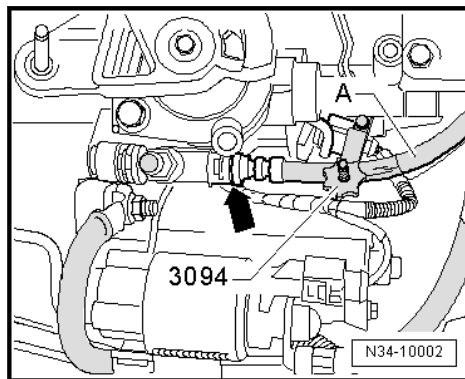
- Clamp the clutch master cylinder hose using a Hose Clamps - Up To 25mm -3094-.



Note

- ◆ *There will be a permanent deformation in the hose after using the Hose Clamps - Up To 25mm -3094-.*
- ◆ *However, the hose is not faulty.*
- ◆ *After removing the Hose Clamps - Up To 25mm -3094-, the hose must be formed back into its original shape.*

Vehicles with a hose/line assembly between the clutch master and slave cylinders



- Clamp off the hose on the hose/line assembly -A- to the clutch slave cylinder using the Hose Clamps - Up To 25mm -3094-.

Continuation for All

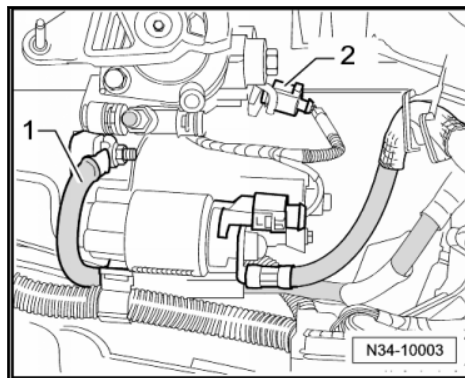
- Pull the clamp -arrow- for the hose/line assembly or pipe out to the stop.
- Remove the hose/line assembly or pipe from the bleed-er/clutch slave cylinder and seal it off.



Caution

Do not press the clutch pedal anymore.

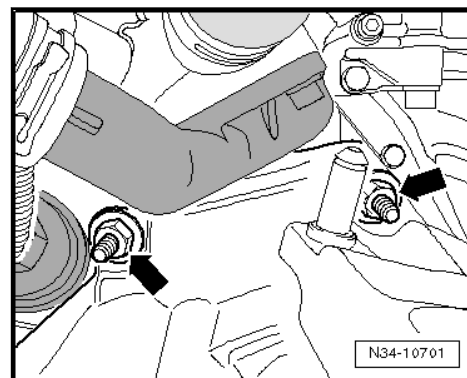
- Remove the ground wire -1- from the top starter bolt.



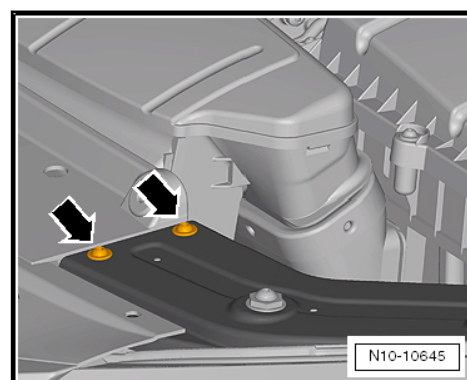
- Disconnect the connector -2- from the Back-Up Lamp Switch -F4-.
- Remove the connector and wire from the starter.



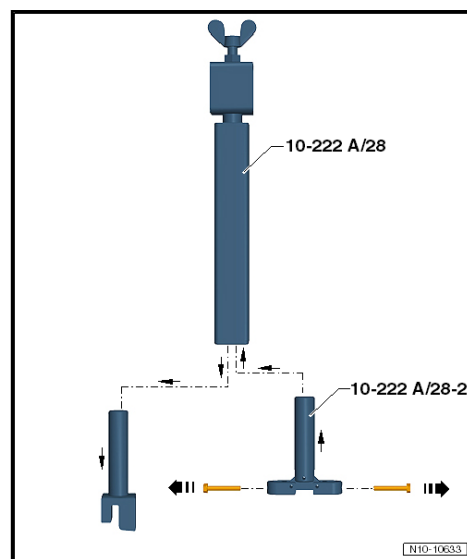
- Remove the upper engine/transmission connecting bolts -arrows-.



- Remove the upper bolt from the starter.
- Remove the plenum chamber cover. Refer to ➔ Body Exterior; Rep. Gr. 50; Plenum Chamber Cover; Plenum Chamber Cover, Removing and Installing.
- Remove the bolts -arrows- for the left and right lock carrier retaining brackets.

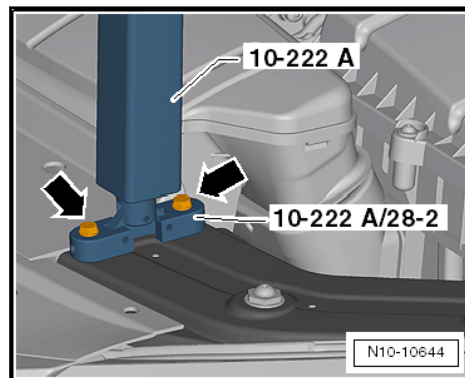


- Remove the lower mounts on the Engine Support Bridge - Engine Support 28 -10 - 222 A /28- and replace them with the Engine Support Bridge - Engine Support 28-2 -10-222 A /28-2-.





- Remove the bolts -arrows- for securing the engine support bridge on the lock carrier from the Engine Support Bridge - Engine Support 28-2 -10-222 A /28-2-.
- Use the bolts present in the Engine Support Bridge - Engine Support 28-2 -10 - 222 A /28-2- for attaching the Engine Support Bridge - Engine Support 28 -10 - 222 A /28-2-. Not the bolts for the retaining bracket.
- Mount the Engine Support Bridge - Engine Support 28 -10 - 222 A /28-2- and tighten the bolts to 8 Nm -arrows-.



Caution

A second technician is needed to mount the Engine Support Bridge on the vehicle to prevent the Engine Support Bridge from tipping.

- Disconnect any hoses and cables located near the engine lifting eyes for the Engine Support Bridge -10-222 A-.

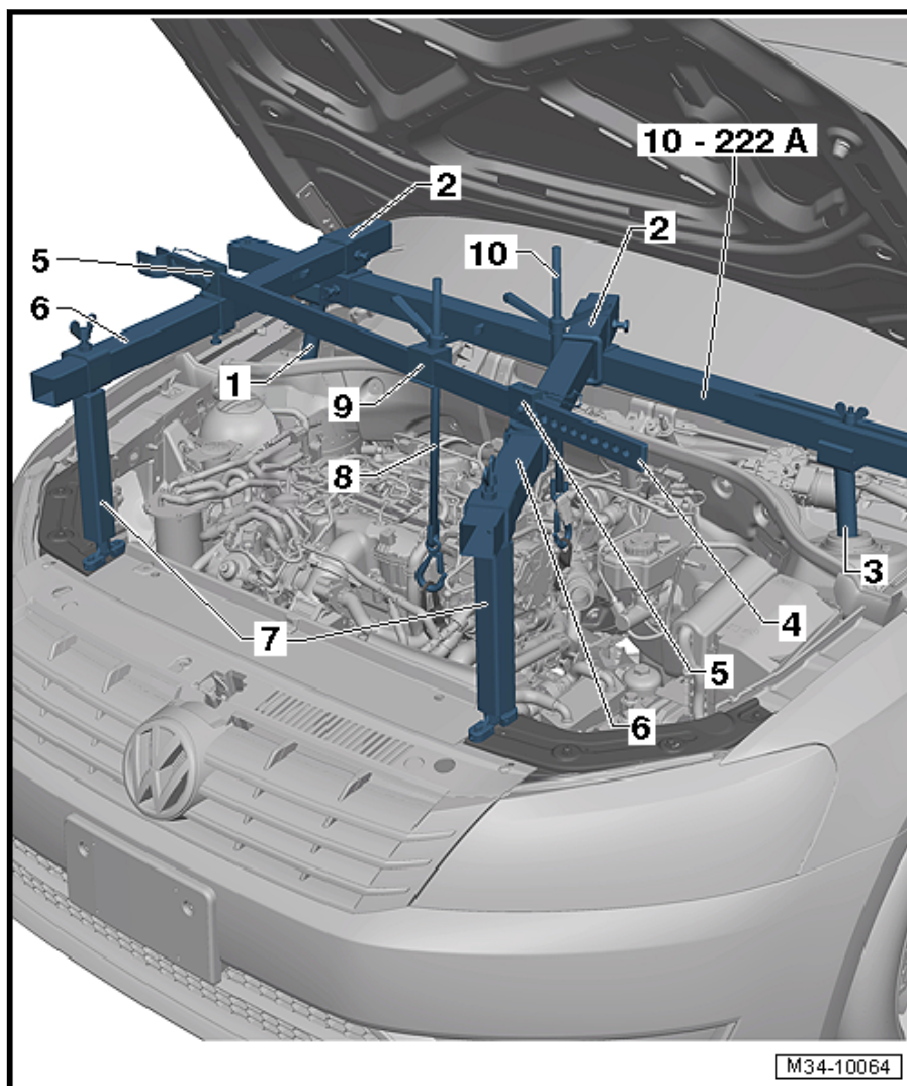
Vehicles with diesel engines

Install the Engine Support Bridge -10 - 222 A- as shown.

- First slide the Movable Joints -item 2- onto the Square Pipe of the Engine Support Bridge -10 - 222 A-.
- The bolts for the Engine Support - Joint Fixture -T40091/3- -item 2- on the Engine Support Bridge -10-222 A- face toward the front of the vehicle.
- Mount the Engine Support Bridge -10 - 222 A- on the suspension strut towers and have a second technician hold it to prevent it from tipping.
- Push the Engine Support - Basic Set - Square Pipe - T40091/1- -item 6- from the front left and right through the Engine Support Bridge - Engine Support 28 -10 - 222 A /28-2- -item 7- and place on each side of the Engine Support - Supplement Kit - Movable Joint -T40093/4- -item 5-.
- Slide the Engine Support - Basic Set - Rail with Holes -T40091/2- -item 4- with the Engine Support - Supplement Kit Mount -T40093/5- -item 9- in the Engine Support - Supplement Kit - Movable Joint -T40093/4- -item 5-.
- Install the locking pins into the Engine Support - Basic Set - Rail with Holes -T40091/2- -item 4- and secure it with the cotter pins.



- 1 - Engine Support - Adapter
2 - 10 - 222A /31-2-
- 2 - Engine Support - Joint Fixture -T40091/3-
- 3 - Engine Support - Adapter
1 - 10 - 222A /31-1-
- 4 - Engine Support - Basic Set - Rail with Holes - T40091/2-
- 5 - Engine Support Bracket - T40093/4-
- 6 - Engine Support - Basic Set - Square Pipe -T40091/1-
- 7 - Engine Support Bridge - Engine Support 28 -10 - 222 A /28- with Engine Support Bridge - Engine Support 28-2 -10-222 A /28-2-
- 8 - Engine Support Bridge - Spindle -10 - 222 A /11-
- 9 - Engine Support Supplement Set - Mount -T40093/5-
- 10 - Engine Support - Bracket w/Spindle and Hook -10 - 222 A /10-



Vehicles with Gasoline Engine

Install the Engine Support Bridge -10 - 222 A- as shown.

- First slide the Movable Joints -item 2- onto the Square Pipe of the Engine Support Bridge -10 - 222 A-.
- The bolts for the Engine Support - Joint Fixture -T40091/3- -item 2- on the Engine Support Bridge -10-222 A- face toward the front of the vehicle.
- Mount the Engine Support Bridge -10 - 222 A- on the suspension strut towers and have a second technician hold it to prevent it from tipping.
- Push the left and right Engine Support - Basic Set - Square Pipe -T40091/1- -item 5- from the front through the Engine Support Bridge - Engine Support 28 -10 - 222 A /28- -item 6- and position the Engine Support - Supplement Kit - Movable Joint -T40093/4- -item 4- on each side.
- Push the Engine Support - Basic Set - Rail with Holes -T40091/2- -item 7- with the Engine Support - Supplement Kit - Mount -T40093/5- -item 8- in the Engine Support - Supplement Kit - Movable Joint -T40093/4- -item 4-.
- Install the locking pins into the Engine Support - Basic Set - Rail with Holes -T40091/2- -item 7- and secure it with the cotter pins.



1 - Engine Support - Adapter
2 - 10 - 222A /31-2-

2 - Engine Support - Joint Fix-
ture -T40091/3-

3 - Engine Support - Adapter
1 -10 - 222A /31-1-

4 - Engine Support Bracket -
T40093/4-

5 - Engine Support - Basic
Set - Square Pipe -T40091/1-

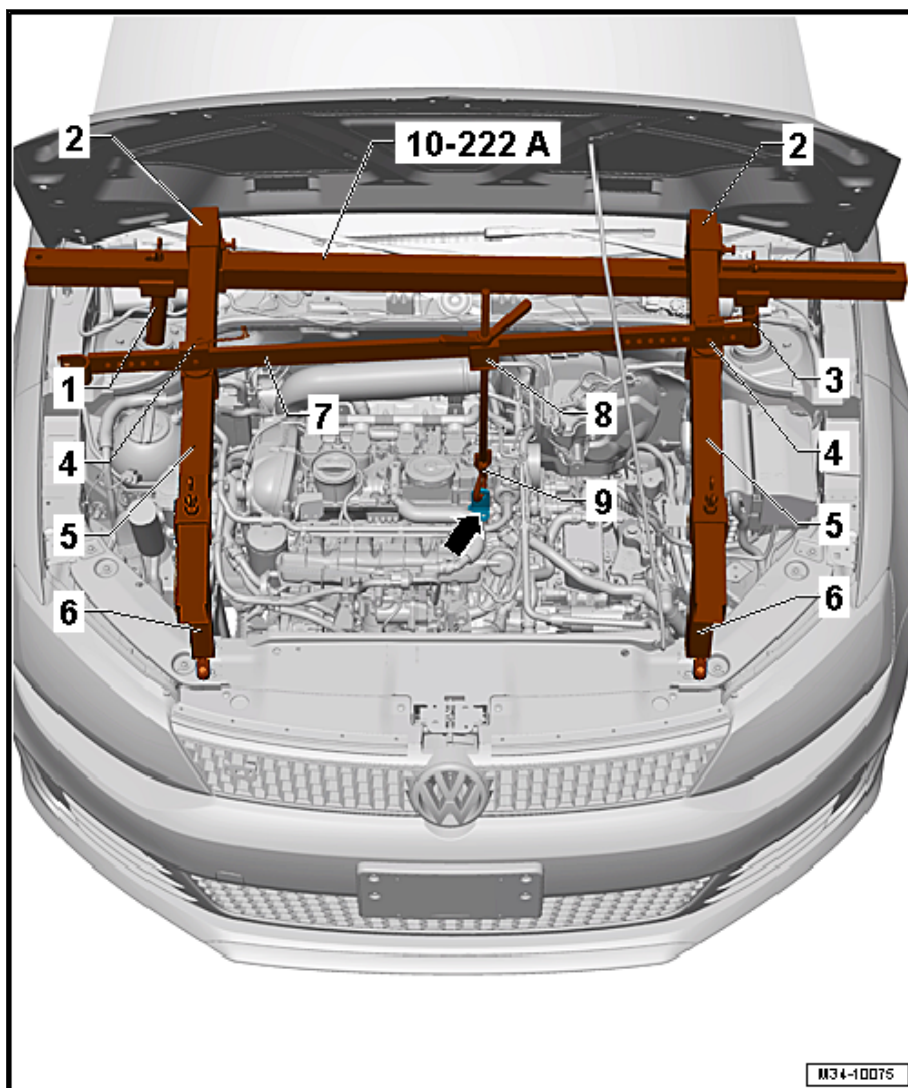
6 - Engine Support Bridge -
Engine Support 28 -10 - 222
A /28- with Engine Support
Bridge - Engine Support 28-2
-10-222 A /28-2-

7 - Engine Support - Ba-
sic Set - Rail with Holes -
T40091/2-

8 - Engine Support Supple-
ment Set - Mount -T40093/5-

9 - Engine Support Bridge -
Spindle -10 - 222 A /11-

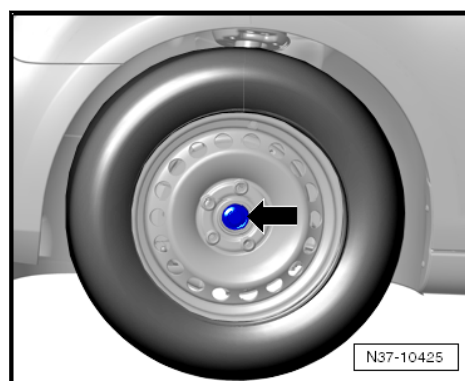
- ☐ Engaged in the engine
lifting eye -arrow-.



All Vehicles:

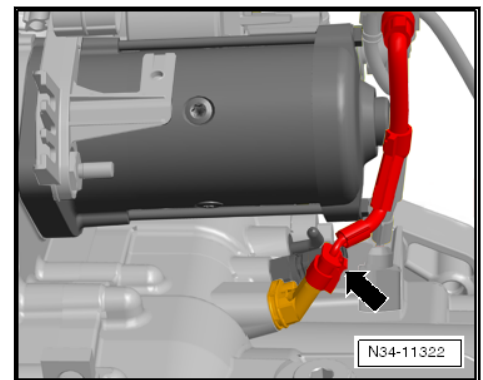
- Hand-tighten all the threaded connections on the Engine Support Bridge. While doing so, adjust the height of the Engine Support Bridge parallel over the Engine Support Bridge - Engine Support 28 -10 - 222 A /28-.
- Pretension the engine/transmission assembly with the spindles, but do not lift.

The left drive axle must be removed later in the procedure.

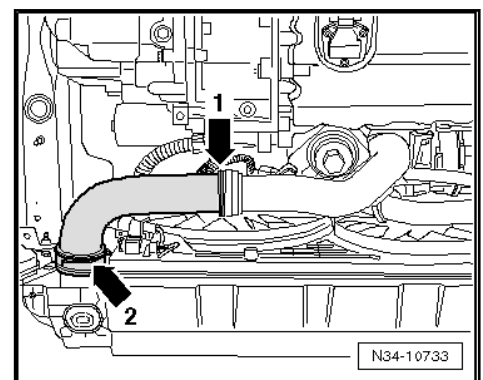




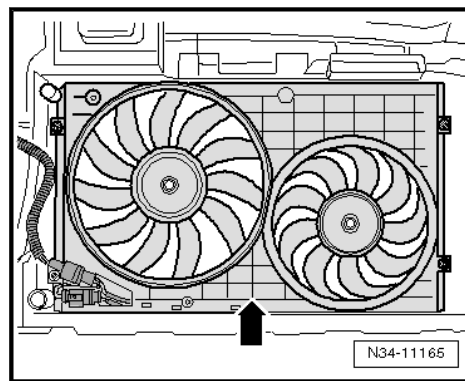
- With the vehicle still resting on its wheels, loosen the left front collar bolt -arrow- a maximum of 90°, otherwise the wheel bearing will become damaged. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axles, Removing and Installing.
- Loosen the left front wheel bolts.
- Lift the vehicle, all four mounts from lifting platform at the same height.
- Remove the left front wheel.
- Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 50; Noise Insulation; Overview - Noise Insulation.
- Remove the left front wheel housing liner. Refer to ⇒ Body Exterior; Rep. Gr. 66; Wheel Housing Liner; Overview - Front Wheel Housing Liner.
- Transmission for vehicles with Start/Stop System: disconnect the connector -arrow- from the Transmission Neutral Position Sensor -G701-.



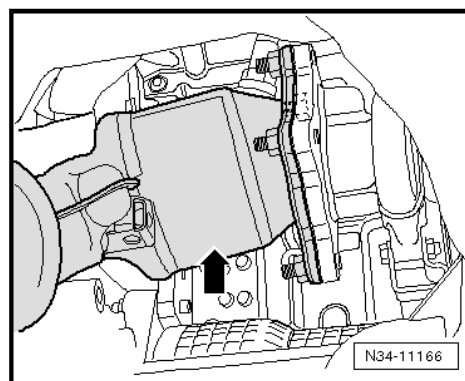
- Remove the bracket from the starter.
- Remove the starter. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Starter; Starter, Removing and Installing.
- Remove the left charge air hose -arrow 1- and -arrow 2-. Refer to ⇒ Rep. Gr. 21; Charge Air System.



- Remove the charge air pipe from the engine. Refer to ⇒ Rep. Gr. 21; Charge Air System.
- Remove the right charge air hose from the charge air cooler. Refer to ⇒ Rep. Gr. 21; Charge Air System.
- Remove the air shroud -arrow- together with the radiator fans. Refer to ⇒ Rep. Gr. 19; Cooling System Components.

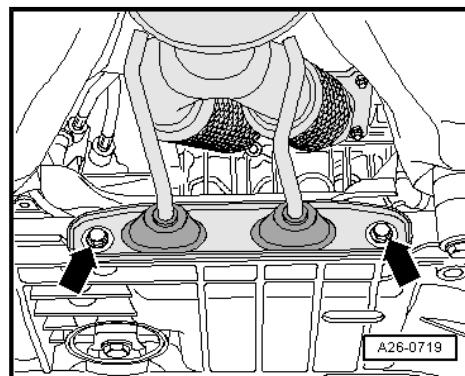


Vehicles with Gasoline Engine

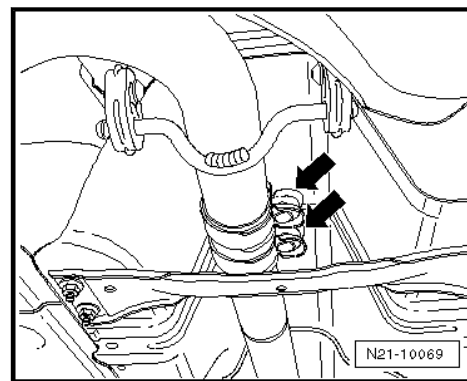


- Remove the front exhaust pipe from the turbocharger (-arrow-). Refer to ⇒ Rep. Gr. 26; Exhaust System, Removing and Installing.

Vehicles with diesel engines



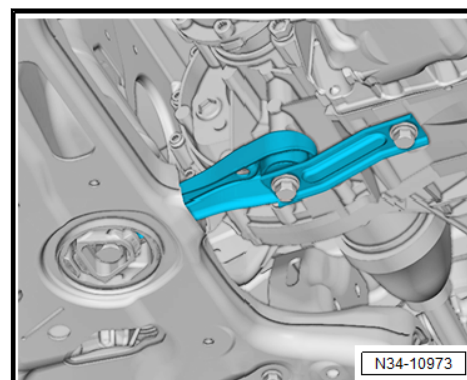
- Remove the exhaust system bracket from the subframe -arrows-. Refer to ⇒ Rep. Gr. 26; Exhaust System.
- Disconnect the exhaust system at the double clamp -arrows-.



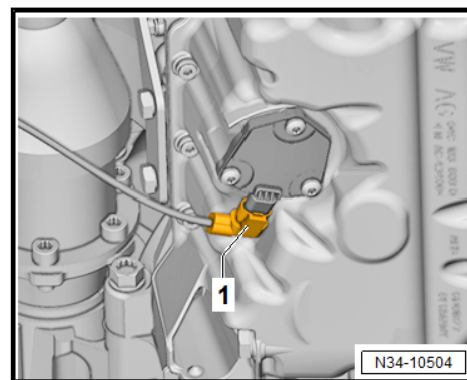
- Tie up the front exhaust pipe or lay it on the tunnel brace.

All Vehicles:

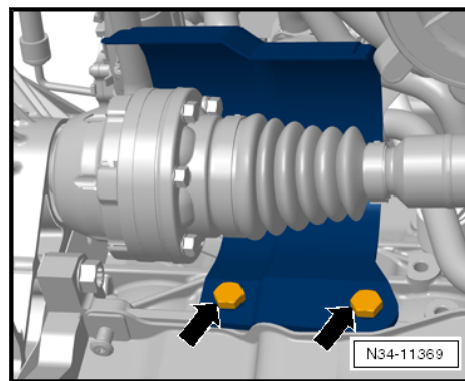
- Remove the pendulum support.



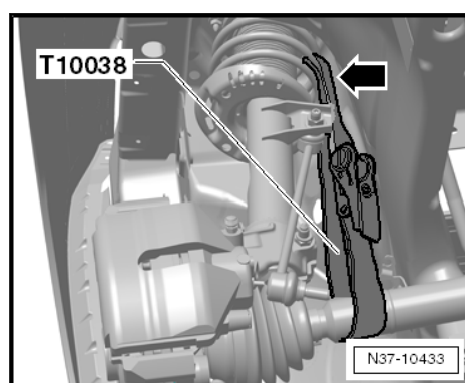
- Disconnect the connector -1- from the Oil Level Thermal Sensor -G266-.



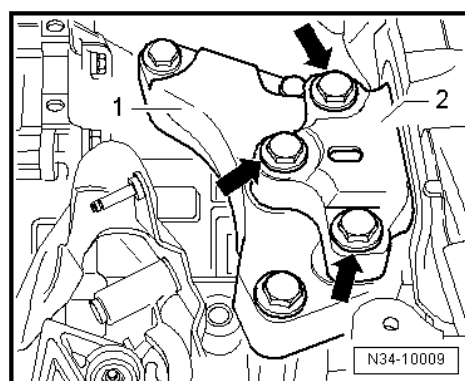
- Remove left coupling rod from stabilizer bar and set off to the side. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Overview - Front Suspension and Control Arm.
- Remove the left drive axle. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axles, Removing and Installing.
- If equipped, remove the drive axle heat shield -arrows-. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Shaft Servicing - Drive Shaft Overview.



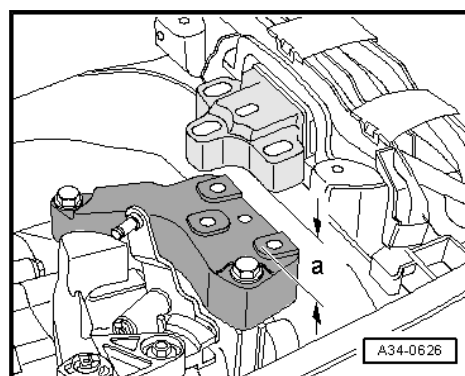
- Remove the right drive axle from the transmission and tie it up. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axles, Removing and Installing.



- Remove the hex bolts -arrows- on the left assembly mount -2- from the bracket -1-.



- Then lower the engine/transmission approximately 40 mm to dimension -a- using the spindles on the Engine Support Bridge -10 - 222A-.

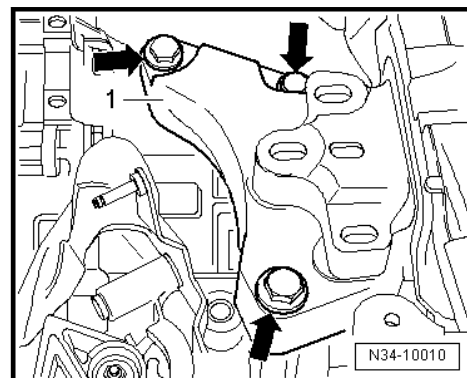




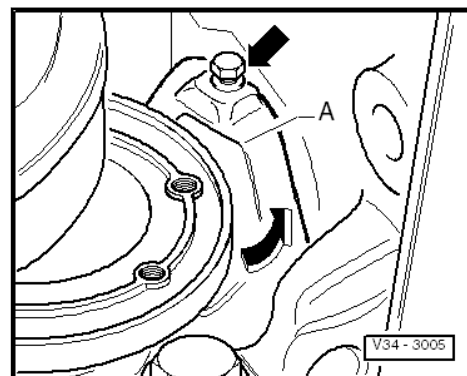
Note

When moving the engine/transmission assembly, pay attention to the connecting lines, hoses and radiator.

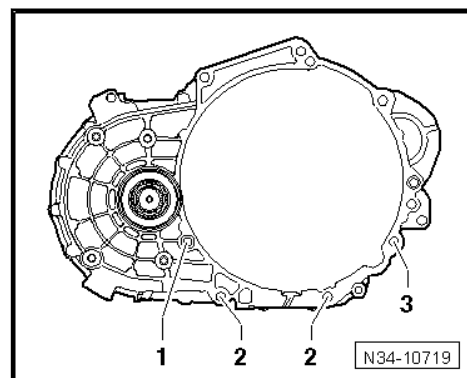
- Remove the bracket -1- from the transmission -arrows-.



- Remove the relay lever with the cable retainer. Refer to ➤ [R1.8 relay Lever", page 108](#) .
- Remove the gearshift lever from the gearshift shaft.
- If equipped, remove the small cover plate -A- for the flywheel -arrows-.



- Remove the lower engine/transmission connecting bolts -2-.

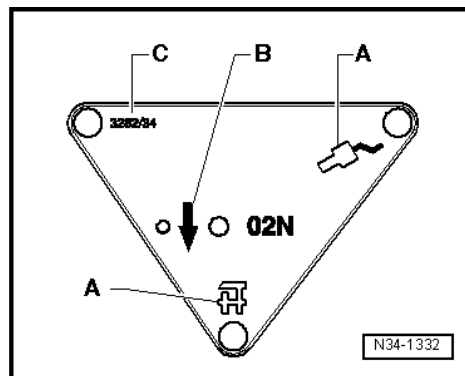


Note

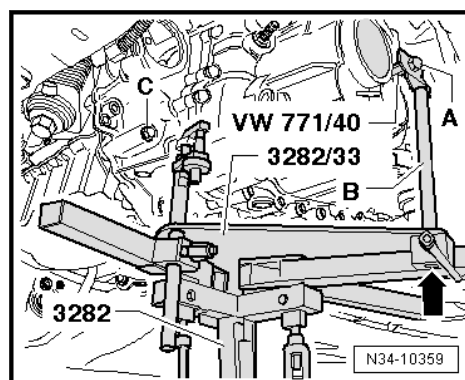
Loosen the engine/transmission connecting bolts -1- and -3- and let them be hand-tight.



Set up the Transmission Support -3282- with the Transmission Support - Mounting Plate 33 -3282/33- to remove transmission "02Q".



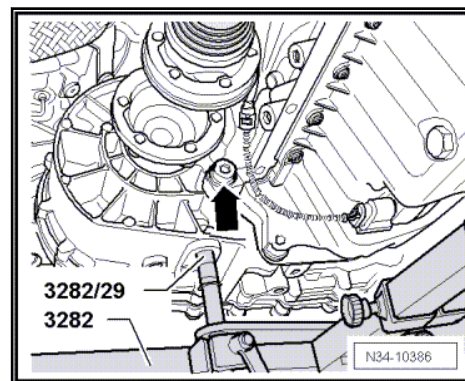
- Insert the Transmission Support -3282- into the Engine and Gearbox Jack -VAS 6931-.
- Align the arms of the Transmission Support so that they align with the holes in the Adjusting Plate.
- Install the Mounting Elements -A- as shown on the Adjusting Plate.
- Install the Transmission Support - Pins 29 -3282/29- instead of the Mounting Element -C-.
- Position the Engine and Gearbox Jack -VAS 6931- under the vehicle. The arrow symbol -B- on the Adjusting Plate points in the direction of travel.
- Align the Adjusting Plate so that it is parallel to the transmission.
- Secure the Slide Hammer Set - Adapter 40 -VW 771/40- inside the threaded hole in the transmission housing as shown.



- Install the Transmission Support - Pins 29 -3282/29- into the hole on the transmission for the pendulum support bolt.
- Secure the transmission on the Transmission Support -3282- with an M10 x 20 bolt -A-.

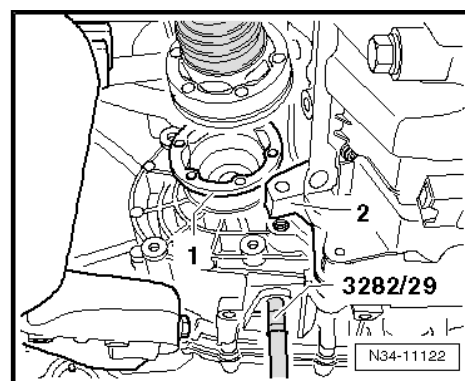
The drift -B- must be flush at the bottom with the guide on the Transmission Support -3282- -arrow-.

- Remove the engine/transmission connecting bolt -C-.
- Remove the last transmission to engine connecting bolt -arrow-.

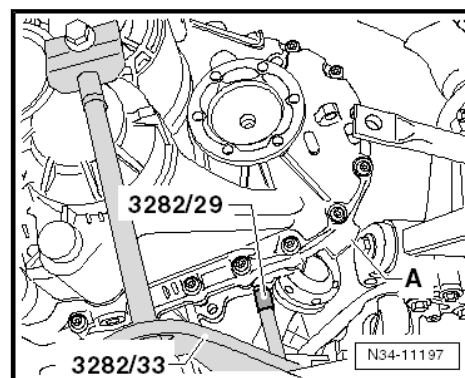


- Separate the transmission from the engine (alignment sleeves).
- Move the transmission near the differential into an angled position using the spindles from the Transmission Support -3282-.
- The differential, near the transmission, must face upward.

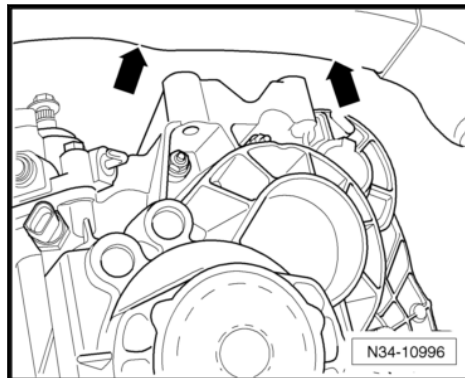
The right flange shaft -1- must be guided over the engine eye -2-.



- Carefully push the engine forward slightly with a second technician.
- Guide the transmission and the differential over the sub-frame -A- and swing it out.



- Pay attention to the longitudinal member -arrows-. Then carefully lower the transmission.



Note

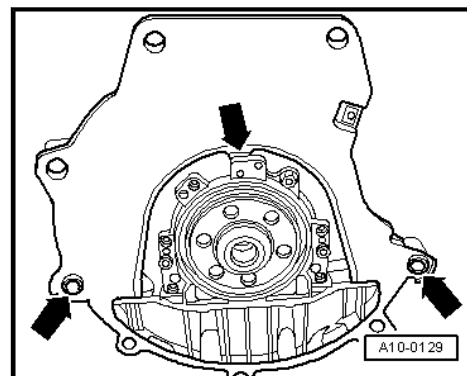
Pay attention to all of the lines when lowering the transmission.

4.2 Transmission, Installing



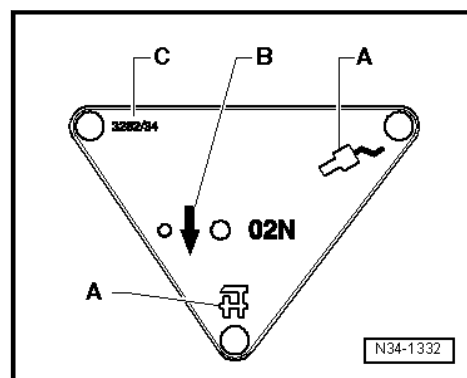
Note

- ◆ *Refer to "Transmission, Removing" to get a list of the special tools needed ➔ [R4.1 removing](#), page 184.*
 - ◆ *Replace the self-locking nuts and bolts.*
 - ◆ *Replace any bolts that were tightened with an additional turn.*
 - ◆ *Install any cable ties that were loosened or cut off during removal at their same location.*
 - ◆ *Clean the input shaft splines and (on used clutch plates) the hub splines. Remove any corrosion and only apply a very thin coat of Lubricating Grease for Clutch Plate Splines -G 000 100- to the splines. Then move the clutch plate back and forth on the input shaft until the hub moves freely on the shaft. Excess grease must be removed.*
 - If the transmission is replaced, transfer the shift lever and the relay lever.
 - Clean any locking compound residue from all threaded holes using a tap.
 - Check whether there are centering sleeves for the engine/transmission in the cylinder block; install if necessary.
- If the alignment sleeves are missing, it will be difficult to shift, there will be clutch problems and the transmission may make noises (loose rattling).
- Make sure the intermediate plate is engaged on the sealing flange and pushed onto the alignment sleeves -arrows-.

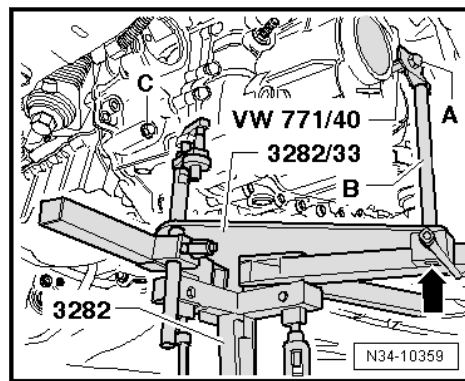


- Check the release bearing for wear. Replace the clutch slave cylinder with release bearing if necessary. Refer to [⇒ S3.2 Clutch Slave Cylinder with Release Bearing, Removing and Installing](#), page 60.

Align the Transmission Support -3282- with the Transmission Support - Mounting Plate 33 -3282/33- in order to install the "02Q" transmission.



- Align the arms of the Transmission Support so that they align with the holes in the Adjusting Plate.
- Install the Mounting Elements -A- as shown on the Adjusting Plate.
- Install the Transmission Support - Pins 29 -3282/29- instead of the Mounting Element -C-.
- Place the transmission on the Engine and Gearbox Jack -VAS 6931-.
- Align the Adjusting Plate and transmission so that they are parallel to each other.
- Install the Transmission Support - Pins 29 -3282/29- into the hole on the transmission for the pendulum support bolt.
- Secure the Slide Hammer Set - Adapter 40 -VW 771/40- inside the threaded hole in the transmission housing as shown.



- Secure the transmission on the Transmission Support -3282- with an M10 x 20 bolt -A-.

The drift -B- must be flush at the bottom with the guide on the Transmission Support -3282- -arrow-.

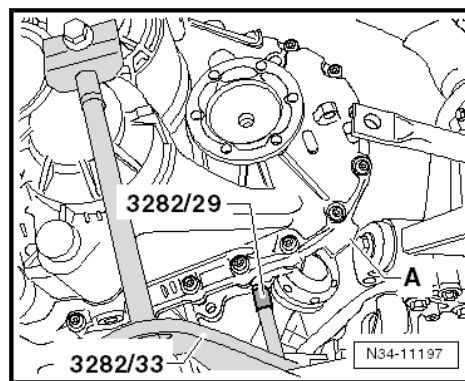
- Position the Engine and Gearbox Jack -VAS 6931- under the vehicle. The arrow on the adjusting plate points in the direction of travel.



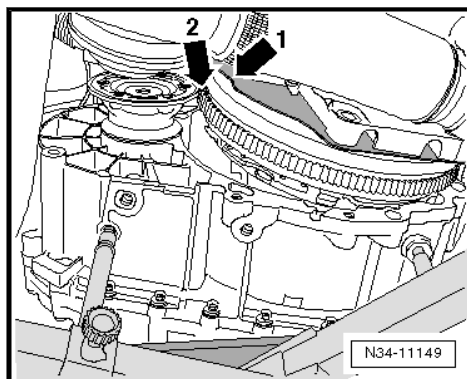
Note

Pay attention to all of the lines when installing the transmission.

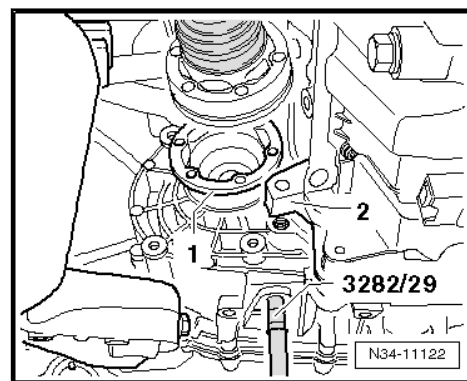
- Lift the transmission carefully.
- Carefully push the engine forward slightly with a second technician.
- Now turn the transmission upward in the differential area and downward in the 6th gear area using the spindles on the Transmission Support -3282-.



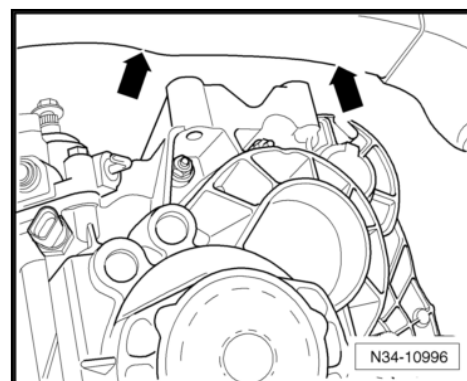
- Guide the transmission with the differential -A- over the sub-frame.
- The right flange shaft must be guided past the flywheel -arrow 2-; pay attention to the intermediate plate -arrow 1-.



- The right flange shaft -1- must be guided over the engine eye -2-.



- At the same time, change the position of the transmission using the spindles from the Transmission Support -3282- so that it does not come into contact with the longitudinal member -arrows-.



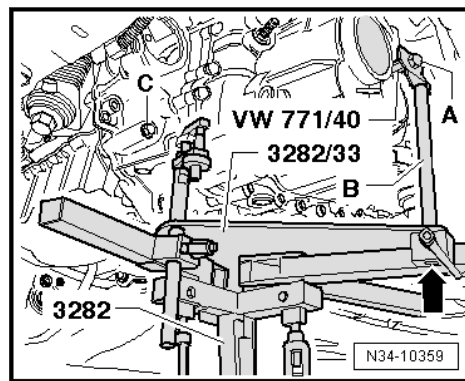
- Turn the transmission to its installation position using the spindles of the Transmission Support -3282-.
- Align the transmission to the engine (alignment sleeves) and insert it.



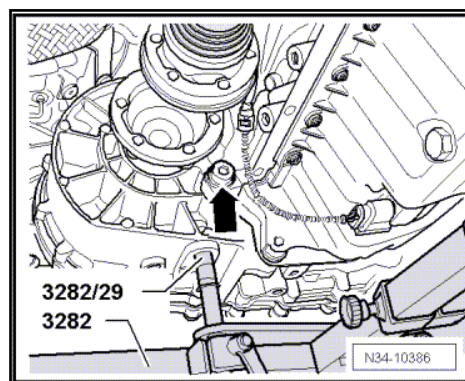
Caution

- ◆ **Brake fluid can escape from the bleeder on the transmission.**

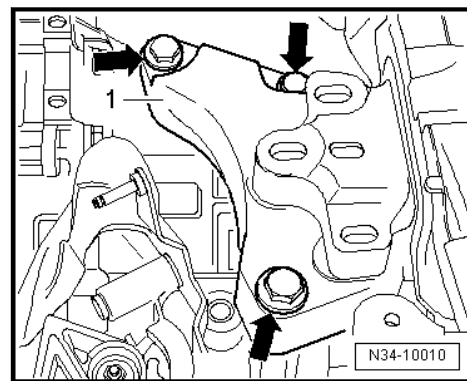
- Install the engine/transmission connecting bolt -C- and tighten to tightening specification. Refer to ➤ [S4.3 specifications](#), [page 211](#).



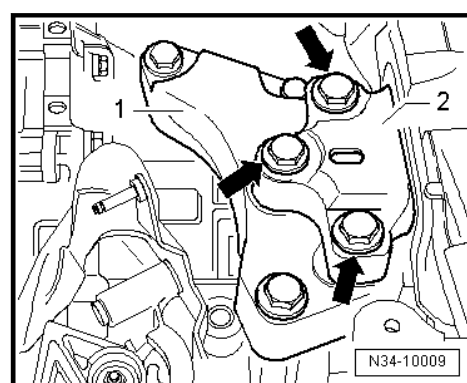
- Install the lower engine/transmission connecting bolts and tighten to tightening specification. Refer to [⇒ S4.3 specifications, page 211](#).
- Install the engine/transmission connecting bolt -arrow- and tighten it to the tightening specification. Refer to [⇒ S4.3 specifications, page 211](#).



- After transmission is bolted to the bottom of the engine, remove the Transmission Support -3282- from the transmission.
- Install the upper engine/transmission connecting bolts and tighten them to the tightening specification. Refer to [⇒ S4.3 specifications, page 211](#).
- Attach the shift lever to the transmission gearshift shaft (refer to [⇒ Fig. “Shift Lever, Installing”, page 105](#)) and tighten the hex nut to the tightening specification [⇒ Item 17 \(page 104\)](#).
- Install the relay lever with the cable retainer. Refer to [⇒ R1.8 relay Lever, page 108](#).
- Attach the bracket -1- with the new hex bolts to the transmission -arrows- and tighten them to the tightening specification. Refer to [⇒ S4.3 specifications, page 211](#).



- Align the engine/transmission in its installation position. To do so, lift it until the bracket -1- lies all the way against the left assembly mount -2-



Caution

There is a risk of damaging the threads in the transmission bracket by inserting the bolts at an angle.

- ◆ *The transmission bracket and the transmission mount support arm must be absolutely parallel to each other before installing the bolts -arrows-. If necessary, lift the back of the transmission using the Engine and Gearbox Jack.*



Note

Install the engine/transmission mount without tension. Refer to ➔ Rep. Gr. 10; Assembly Mounts.

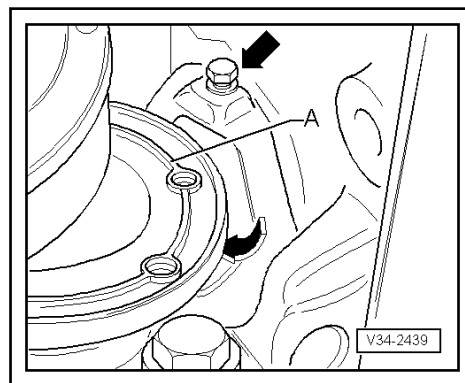
- Install the new hex bolts -arrows- for the left assembly mount -2- in the bracket -1- and tighten to the tightening position. Refer to ➔ [S4.3 specifications](#), [page 211](#) .



WARNING

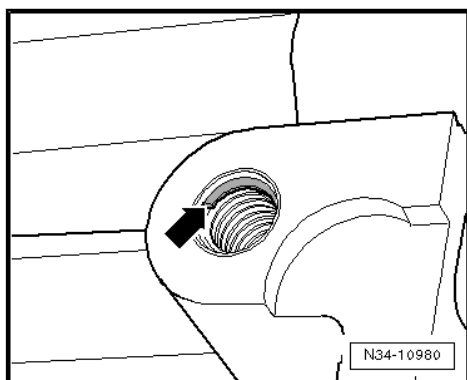
Only remove the Engine Support Bridge -10 - 222 A- if all of the bolts for the assembly mount are tightened to the tightening specification.

- If equipped, install the small cover plate -A- for the flywheel -arrows-. Refer to ➔ [S4.3 specifications](#), [page 211](#) .



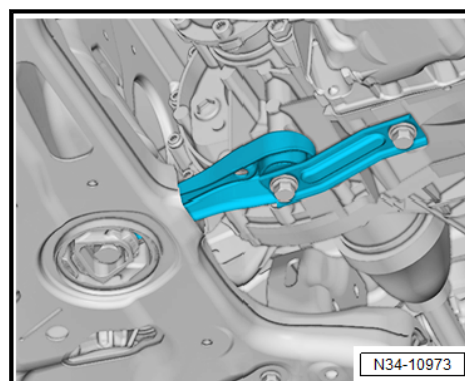
Note

- ◆ There are threaded inserts (for example "Heli Coil") in the pendulum support fastening holes.
- ◆ Identifying feature: there is a collar on the first thread -arrow-.

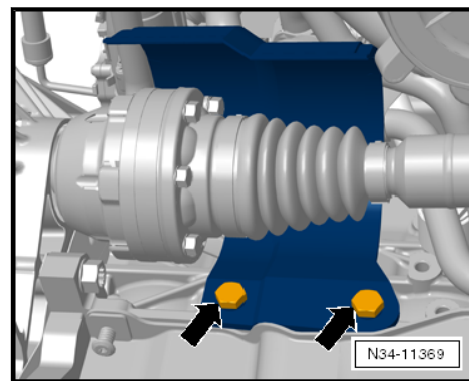


Pay attention to the corresponding bolts and tightening specifications. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Overview - Subframe.

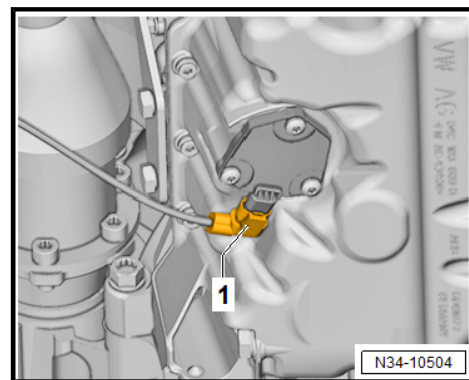
- Install the pendulum support. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Overview - Subframe.



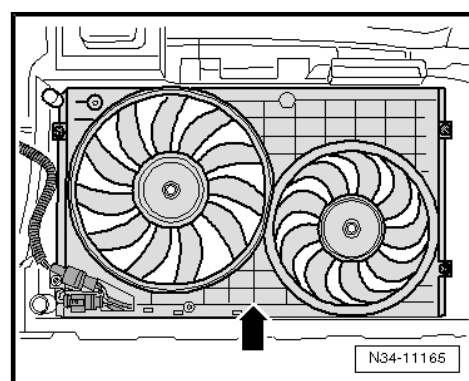
- Install the drive axles. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axle, Removing and Installing.
- If equipped, install the drive axle heat shield -arrows-. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Shaft Servicing - Drive Shaft Overview.



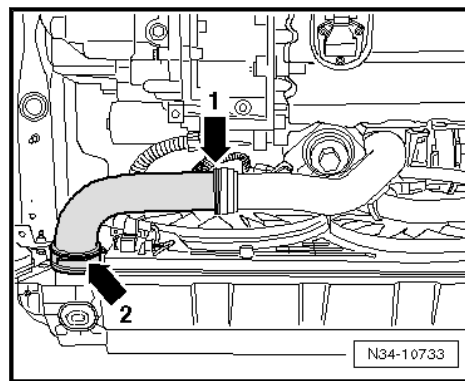
- Attach the left coupling rod. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Overview - Front Suspension and Control Arm.
- Connect the connector -1- to the Oil Level Thermal Sensor -G266-.



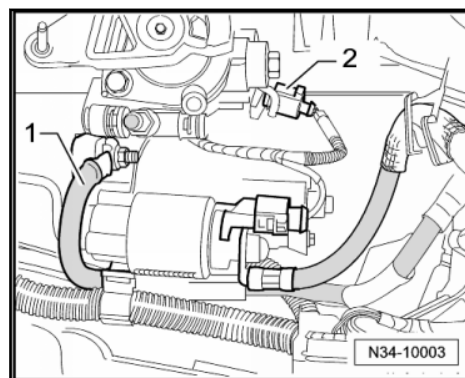
- Assemble the exhaust system and attach the exhaust system bracket to the subframe. Refer to ⇒ Rep. Gr. 26; Exhaust System Components, Removing and installing.
- Install the air shroud -arrow- and the radiator fans. Refer to ⇒ Rep. Gr. 19; Cooling System Components.



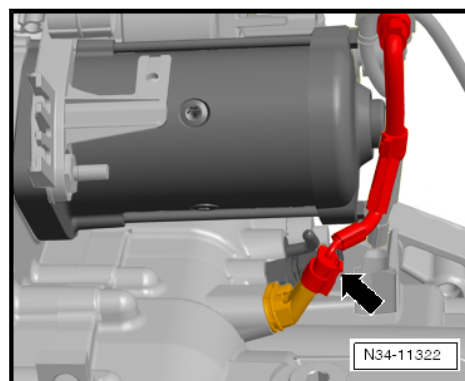
- Attach the charge air pipe to the engine. Refer to ⇒ Rep. Gr. 21; Charge Air System.
- Install the left charge air hose -arrow 1- and -arrow 2-. Refer to ⇒ Rep. Gr. 21; Charge Air System.



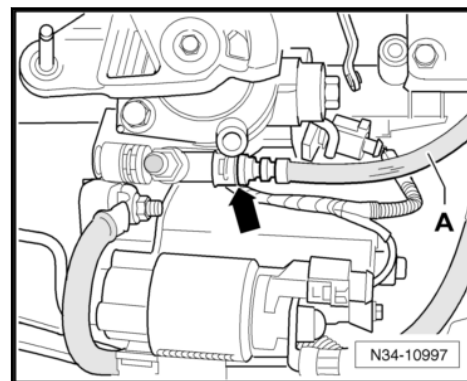
- Install the right charge air hose to the charge air cooler. Refer to ➤ Rep. Gr. 21; Charge Air System.
- Then insert the starter and secure it with the lower bolt. Refer to ➤ Electrical Equipment; Rep. Gr. 27; Starter; Starter, Removing and Installing.
- Attach the bracket for the wires to the lower starter bolt.
- Install the upper starter bolt and connect the connectors and wires to the starter. Refer to ➤ Electrical Equipment; Rep. Gr. 27; Starter; Starter, Removing and Installing.
- Secure the ground wire -1- to the upper starter bolt.



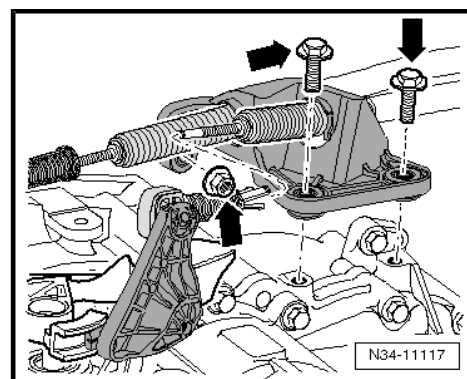
- Connect the connector -2- to the Back-Up Lamp Switch -F4-.
- Transmission for vehicles with Start/Stop System: connect the connector -arrow- to the Transmission Neutral Position Sensor -G701-.



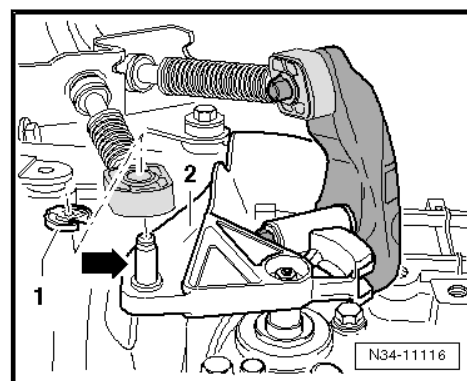
- Push the hose/line assembly or pipe -A- into the bleed-er/clutch slave cylinder to the stop and push the clamp -arrow- downward.



- Pull on the line to make sure it is secure.
- Remove the Hose Clamps - Up To 25mm -3094- from the hose/line assembly or from the supply hose.
- After removing the Hose Clamps - Up To 25mm -3094-, bring the return hose back to its original shape.
- Bleed the clutch mechanism. Refer to ➤ [M2.9 echanism, Bleeding", page 55](#) .
- Make sure the vacuum hose for the brake system is installed correctly. Refer to ➤ Brake System; Rep. Gr. 47; Hydraulic System.
- Attach the cable bracket to the transmission and tighten the bolts or nuts -arrows- to the tightening specification ➤ [Item 6 \(page 103\)](#) and ➤ [Item 10 \(page 103\)](#) .



- Insert the selector cable into the cable retainer.

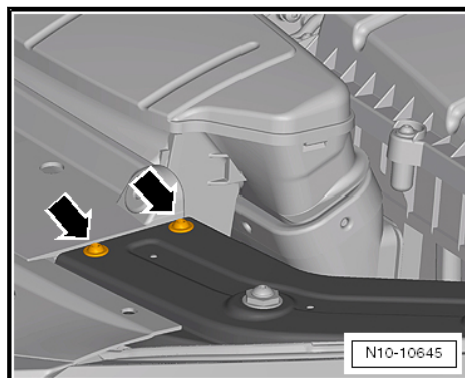


- Apply a small amount of grease to the pin -arrow- on the selector lever -2-.

Refer to the ➤ Electronic Parts Catalog (ETKA) for the grease allocation.



- Replace the lock washer -1- after every disassembly.
- Adjust the gearshift mechanism. Refer to ➤ [M1.11 echanism, Adjusting", page 121](#) .
- Install the plenum chamber cover. Refer to ➤ Body Exterior; Rep. Gr. 50; Plenum Chamber Cover; Plenum Chamber Cover, Removing and Installing.
- Install the bolts -arrows- for the left and right lock carrier retaining brackets to the tightening specification. Refer to ➤ Body Exterior; Rep. Gr. 50; Lock Carrier; Lock Carrier - Attachments.

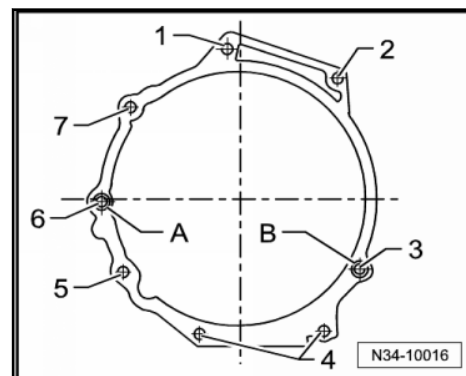


- Install the battery tray and the battery. Refer to ➤ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Removing and Installing.
- Install the air filter. Refer to ➤ Rep. Gr. 23; Diesel Direct Injection System; Air Filter or ➤ Rep. Gr. 24; Fuel Injection System; Overview - Air Filter, Removing and Installing.
- Install the engine cover. Refer to ➤ Rep. Gr. 15; Cylinder Head; Engine Cover, Removing and Installing.
- Connect the battery and follow the steps after the battery is connected. Refer to ➤ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Disconnecting and Connecting.
- Check the transmission fluid level. Refer to ➤ [F8 fluid, Checking", page 252](#) .
- Install the left front housing liner. Refer to ➤ Body Exterior; Rep. Gr. 66; Wheel Housing Liner; Front Wheel Housing Liner - Overview.
- Install the noise insulation. Refer to ➤ Body Exterior; Rep. Gr. 50; Noise Insulation; Overview - Noise Insulation.
- Install the wheel. Refer to ➤ Suspension, Wheels, Steering; Rep. Gr. 44; Wheel Tightening Specifications.



4.3 Tightening Specifications

Transmission to engine (engine flange face)

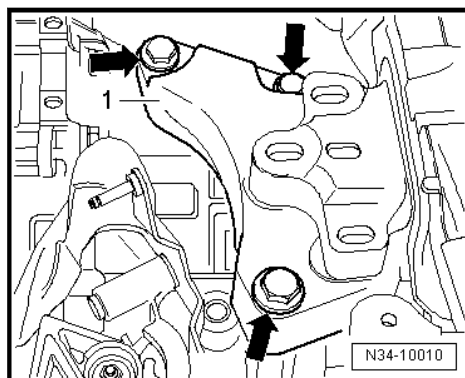


Item	Bolt	Quantity	Nm
1	M12 x 55 ◆ With a short threaded pin M8 or M12 x 50 ◆ Without threaded pin	1	80
2	M12 x 55 ◆ With a long M8 threaded pin	1	80
3	M12 x 70 or M12 x 65	1	80
4	M10 x 50	2	40
5	M10 x 105	1	40
6	M12 x 165 ◆ With a short M8 threaded pin ◆ Also starter to transmission	1	80
7	M12 x 165 ◆ With a short M8 threaded pin ◆ Also starter to transmission	1	80
-	M6 x 8 ◆ Small flywheel cover plate (not present on all engines)	1	10

-A-: Alignment sleeves for centering



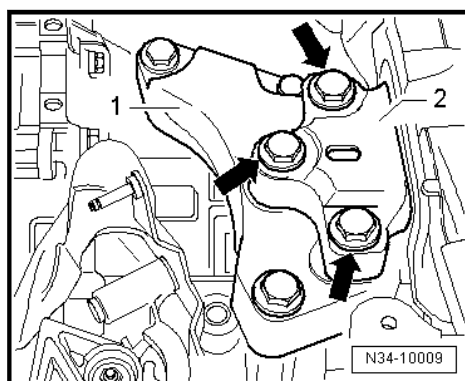
Transmission bracket -1- to transmission



- Replace the bolts.

Tighten the bolts -arrows-: 60 Nm + 90°.

Transmission to body



- Replace the bolts.

Tighten the bolts -arrows-: 60 Nm + 90°.



Note

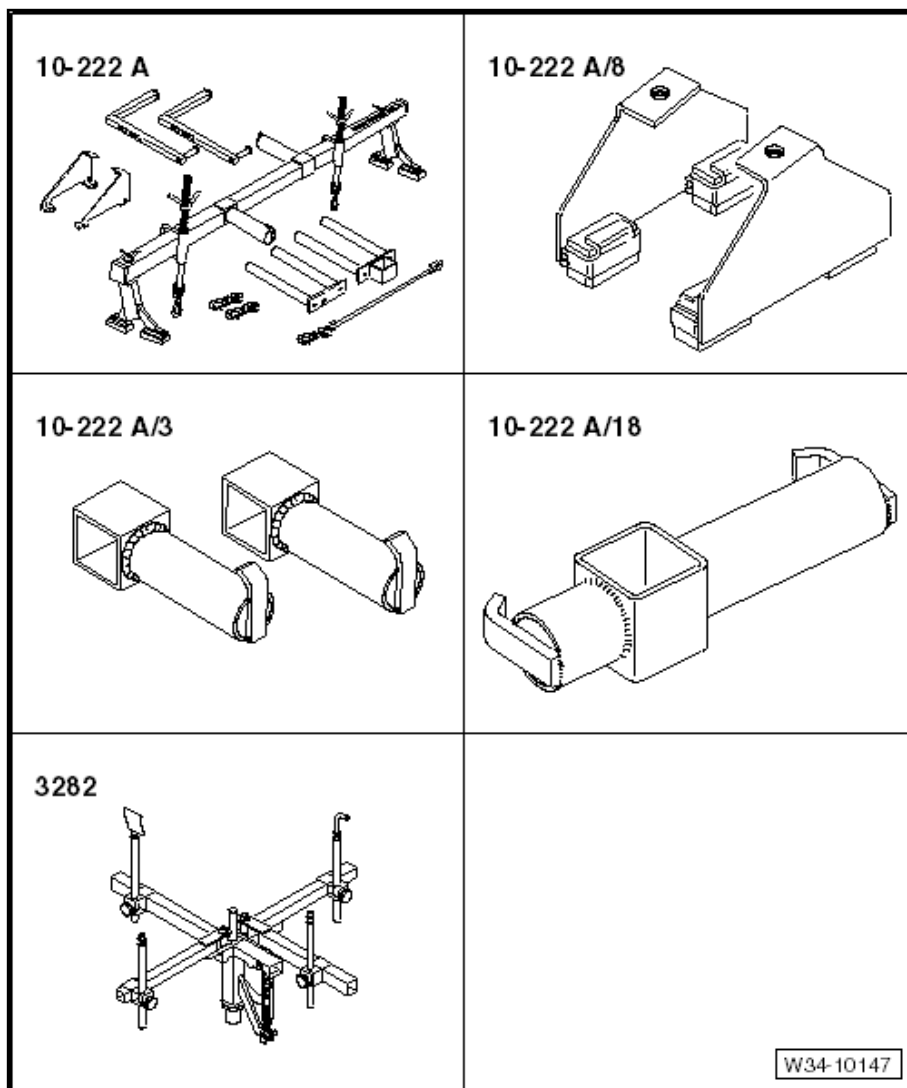
*Install the engine/transmission mount free of tension. Refer to
⇒ Rep. Gr. 10; Engine, Removing and Installing.*



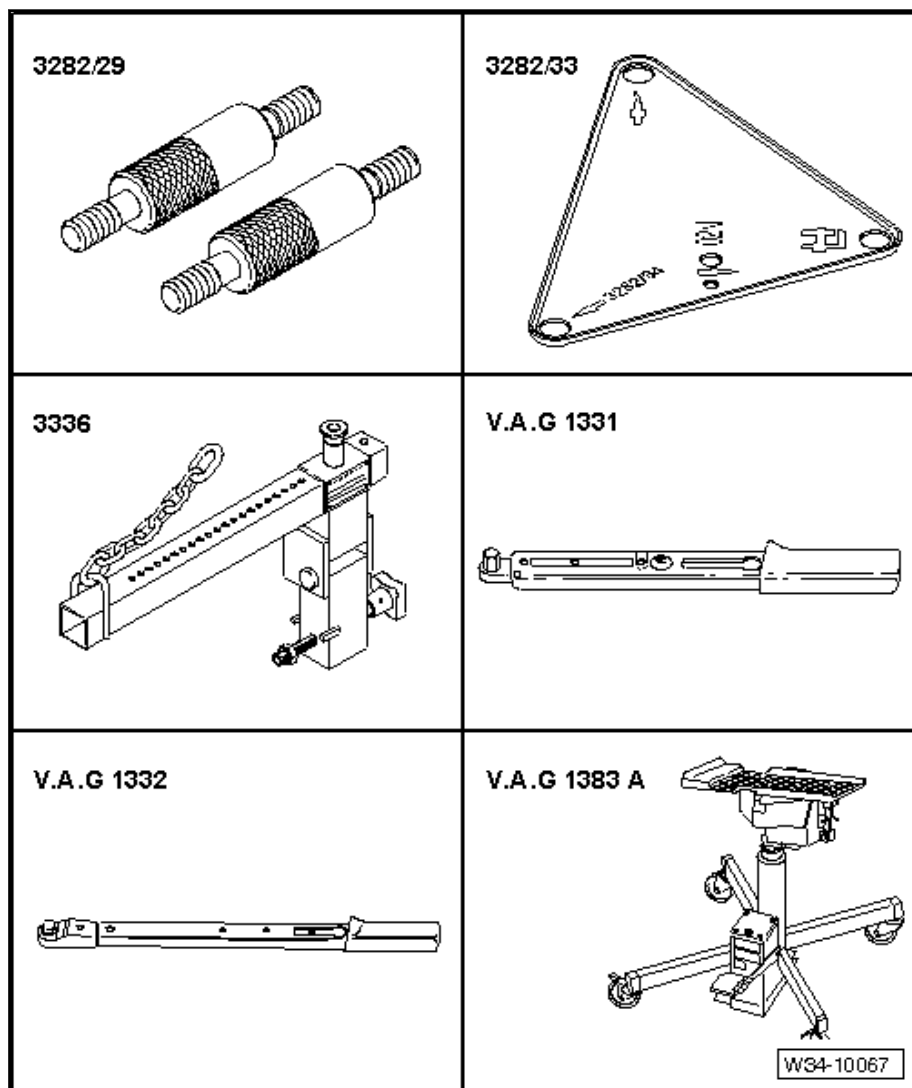
5 Transmission, Removing and Installing, Jetta from MY 2005 , Golf Wag- on from MY 2007 and Golf Wagon from MY 2010, Vehicles with AWD

5.1 Transmission, Removing and Installing, Vehicles with Turbo Diesel En- gine

Special tools and workshop
equipment required



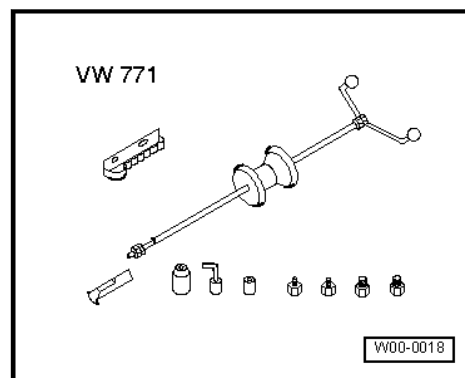
- ◆ Engine Support Bridge -10 - 222 A-
- ◆ Engine Support Bridge - Engine Support Feet -10 - 222 A /8-
- ◆ Engine Support Bridge - Engine Support 3 -10-222 A/3-
- ◆ Engine Support Bridge - Engine Support 18 -10 - 222 A /18-
- ◆ Transmission Support -3282-



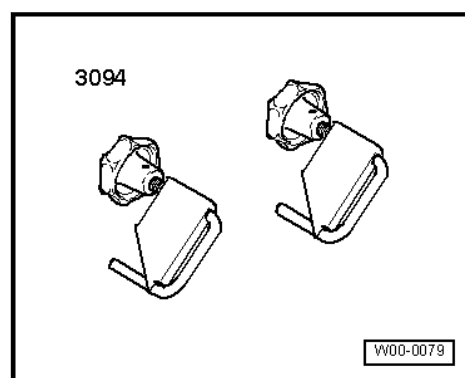
- ◆ Support Elements for transmission (determine when mounting the Mounting Plate on the Transmission Support)
- ◆ Transmission Support - Mounting Plate 33 -3282/33-
- ◆ Transmission Support Jig -3336- for transporting the transmission
- ◆ Torque Wrench 1331 5-50Nm -V.A.G 1331-
- ◆ Torque Wrench 1332 40-200Nm -V.A.G 1332-
- ◆ Engine and Gearbox Jack -VAS 6931-



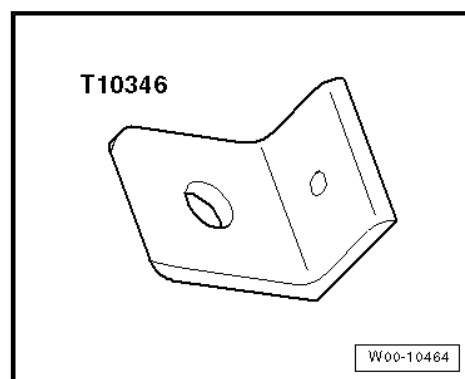
◆ Slide Hammer Set - Adapter 40 -VW 771/40-



◆ Hose Clamps - Up To 25 mm -3094-



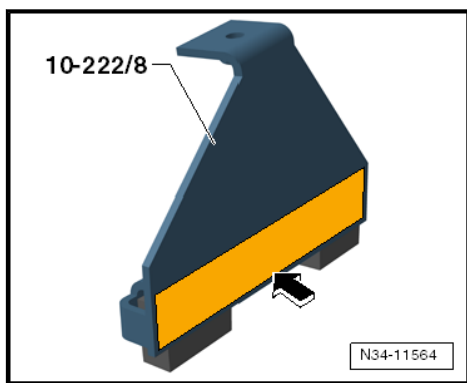
◆ Engine Support Bridge - Gearbox Bracket -T10346-



- ◆ Lubricating Grease for Clutch Plate Splines -G 000 100-
- ◆ Determine the shift mechanism grease using the ➔ Electronic Parts Catalog (ETKA).
- ◆ M6 x 80 collar bolt
- ◆ M10 x 20 hex bolt

The Engine Support Bridge -10-222 A- with the Engine Support Bridge - Engine Support Feet -10 - 222 A /8- are mounted on the longitudinal members later in the procedure.

- To protect the edges of the fender, cover the bottom of both Engine Support Bridge - Engine Support Feet -10 - 222 A /8- with cloth tape -arrow-. Refer to the ➔ Electronic Parts Catalog (ETKA Chemical Materials).

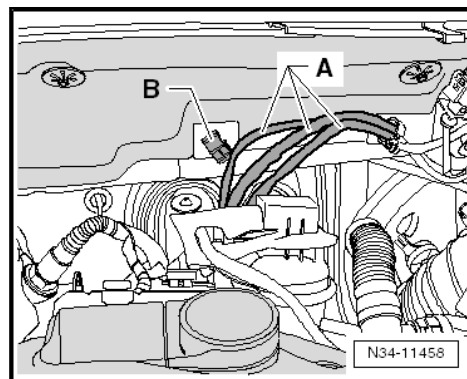


5.1.1 Transmission, Removing

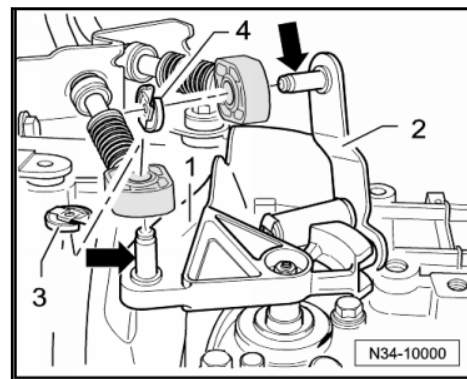
- First check whether a coded radio is installed. If this is the case obtain the anti-theft code.
- Disconnect the battery ground cable. Refer to ➤ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Disconnecting and Connecting.

Later in the procedure, the Engine Support Bridge -10 -222 A- is connected to the engine lifting eyes.

- Remove the engine cover if it is blocking the lifting eyes.
- Remove the air filter housing if it is located near the battery. Refer to ➤ Rep. Gr. 23; Diesel Direct Injection System, Overview - Air Filter.
- Remove the battery and battery tray. Refer to ➤ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Removing and Installing.
- If equipped, remove the wires -A- from the bracket -B-.



- Remove the shift cable lock washer -3- from the transmission shift lever -1- and remove the cable from the pin -arrow-.

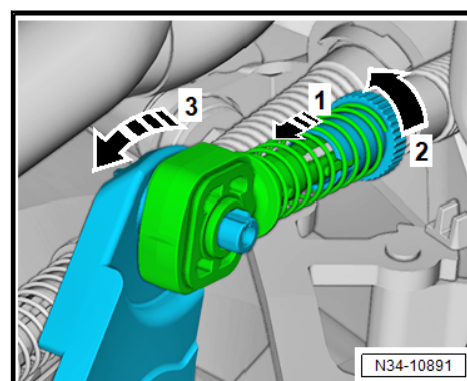


Metal Relay Lever

- Remove the selector cable lock washer -4- from the relay lever -2- and remove the cable from the pin -arrow-.

Plastic Relay Lever

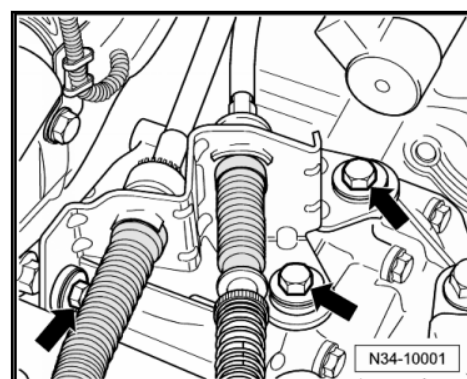
- Remove the cable retainer from the selector cable.



- To avoid damage to the selector cable, the cable retainer must be disconnected from the selector lever before removal.
- Pull the securing mechanism all the way forward in -direction of the arrow 1- and then unlock to the left in -direction of the arrow 2-.
- Press the relay lever forward (-direction of the arrow 3-).
- The plastic relay lever is removed together with the cable retainer later in the procedure.

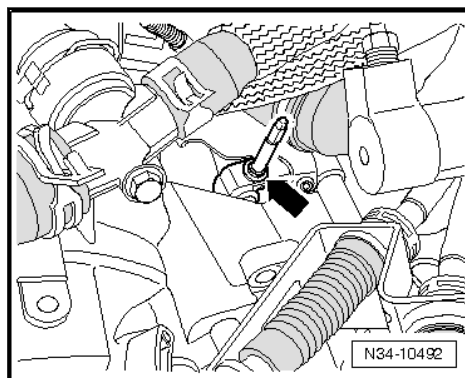
Continuation for All

- Remove the cable bracket from the transmission -arrows-, tie up to the side.

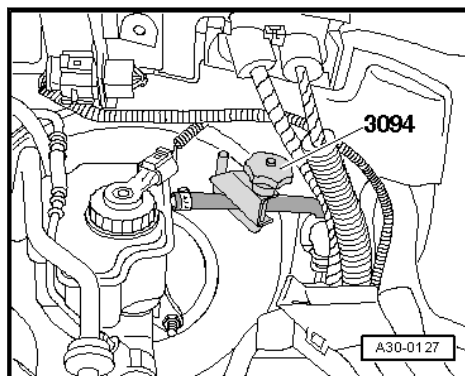




- If equipped, remove the bleed pipe from the bevel box -arrow-.

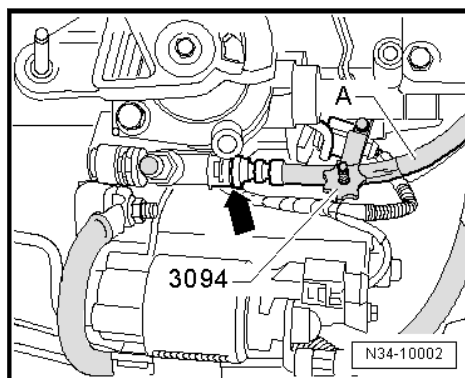


Vehicles with a pipe between the clutch master and slave cylinders



- Clamp the clutch master cylinder hose using a Hose Clamps - Up To 25mm -3094-.

Vehicles with a hose/line assembly between the clutch master and slave cylinders



- Clamp off the hose on the hose/line assembly -A- to the clutch slave cylinder using the Hose Clamps - Up To 25mm -3094-.

Continuation for All

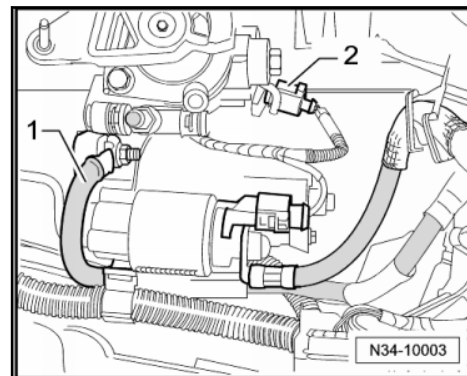
- Pull the clamp -arrow- for the hose/line assembly or pipe out to the stop.
- Remove the hose/line assembly or pipe from the bleed-/clutch slave cylinder and seal it off.



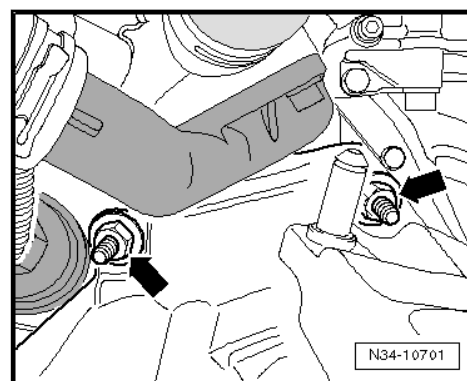
Caution

Do not press the clutch pedal anymore.

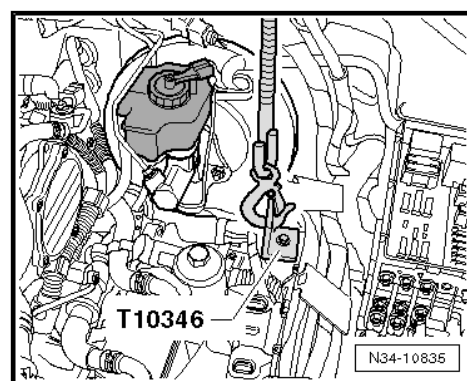
- Remove the ground wire -1- from the top starter bolt.



- Disconnect the connector -2- from the Back-Up Lamp Switch -F4-.
- Remove the connector and wire from the starter.
- Remove the upper engine/transmission connecting bolts -arrows-.

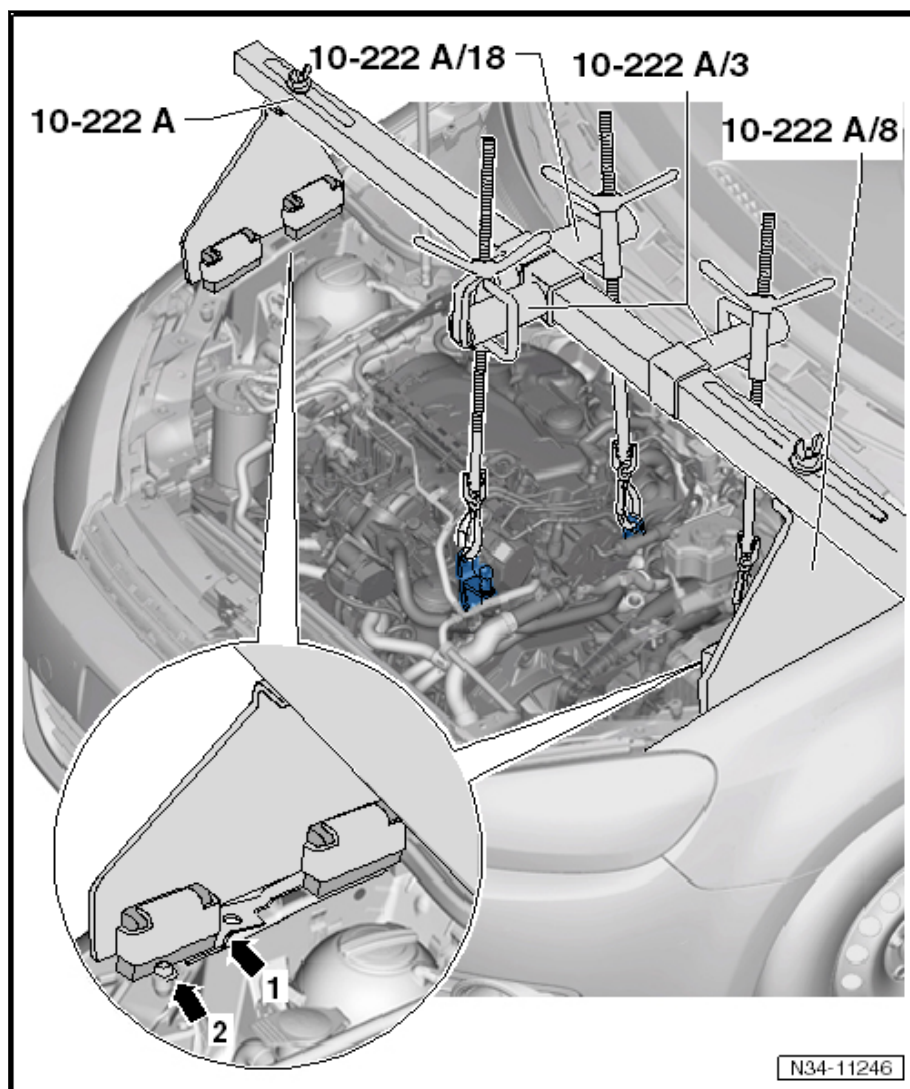


- Remove the upper bolt from the starter.
- Disconnect any hoses and cables located near the engine lifting eyes for the Engine Support Bridge -10-222 A-.
- Install the Engine Support Bridge - Gearbox Bracket - T10346- in the most rear hole out of the three holes in the battery tray.





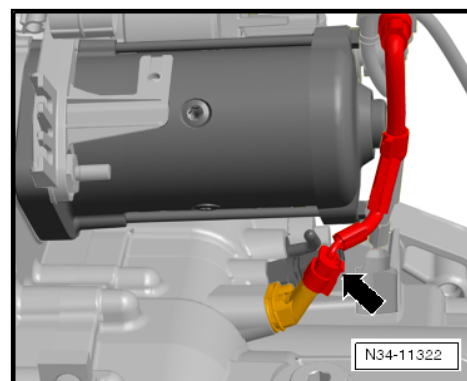
- To do so, use a M6 x 80 collar bolt or one of the battery tray bolts.
- Disconnect any hoses and cables located near the engine lifting eyes for the Engine Support Bridge -10-222 A-.
- Position the Engine Support Bridge -10-222 A- in front of the hood support.



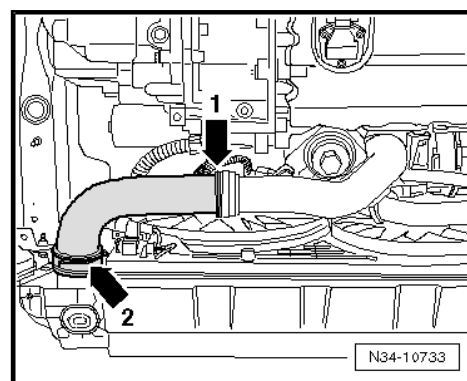
- Use:
 - ◆ Engine Support Bridge - Engine Support 3 -10-222 A/3-
 - ◆ Engine Support Bridge - Engine Support Feet -10 - 222 A /8-
 - ◆ Engine Support Bridge - Engine Support 18 -10 - 222 A /18-
- Position the Engine Support Bridge - Engine Support Feet -10-222 A /8-:
 - On the upper longitudinal members, directly in front of the ridge (-arrow 1-) next to the bolt (-arrow 2-)
- Then connect the Engine Support Bridge - Gearbox Bracket -T10346- to the Engine Support Bridge.
- Hook the Spindles into the left lifting eyes on the engine.



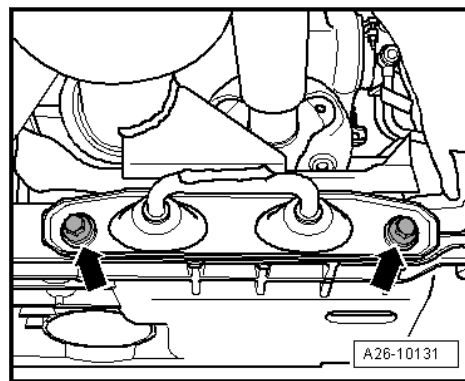
- Lightly pretension the engine/transmission assembly and Engine Support Bridge using the spindles.
- Loosen the left and right front wheel bolts.
- Raise the vehicle.
- Remove the front wheels.
- Remove the lower section of the left front wheel housing liner. Refer to ➤ Body Exterior; Rep. Gr. 66; Wheel Housing Liner.
- Remove the noise insulation. Refer to ➤ Body Exterior; Rep. Gr. 50; Noise Insulation.
- Transmission for vehicles with Start/Stop System: disconnect the connector -arrow- from the Transmission Neutral Position Sensor -G701-.



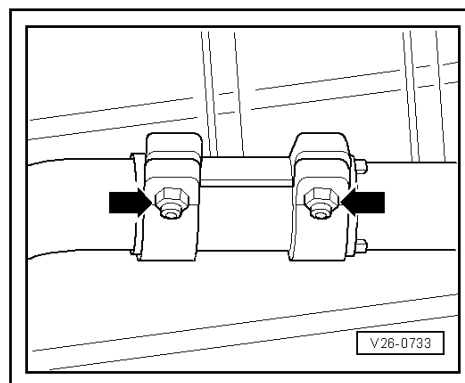
- Remove the bracket from the starter.
- Remove the starter. Refer to ➤ Electrical Equipment; Rep. Gr. 27; Starter; Starter, Removing and Installing.
- Disconnect the connection -arrow 1- or -arrow 2- on the charge air hose. Refer to ➤ Rep. Gr. 21; Charge Air System with Turbocharger.



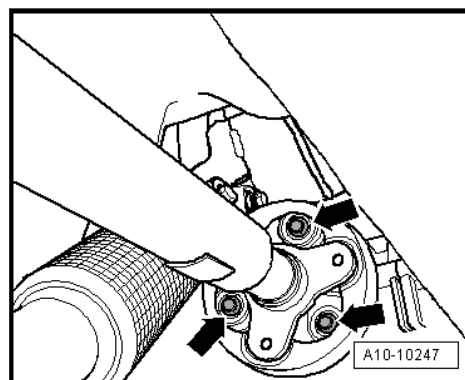
- Remove the exhaust system bracket from the subframe -arrows-.



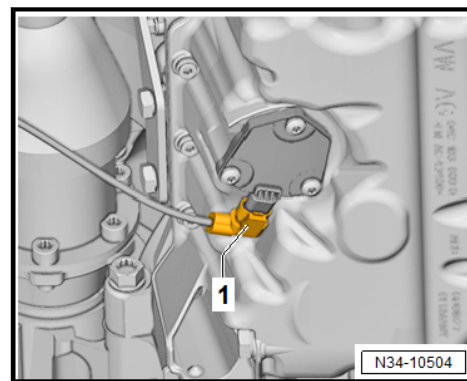
- Disconnect the exhaust system at the clamping sleeve -arrows-.



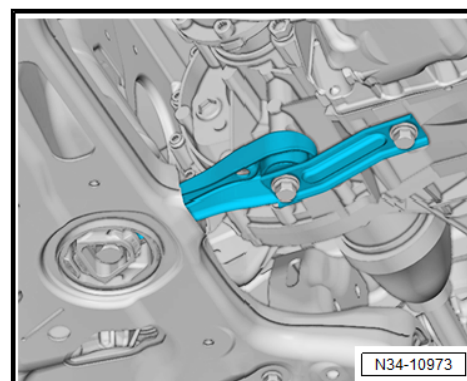
- Tie up the front exhaust pipe.
- Mark the position of the driveshaft with the flexible disc to the bevel box flange.



- Remove the driveshaft with the flexible disc from the bevel box flange -arrows-.
- Disconnect the connector -1- from the Oil Level Thermal Sensor -G266-.

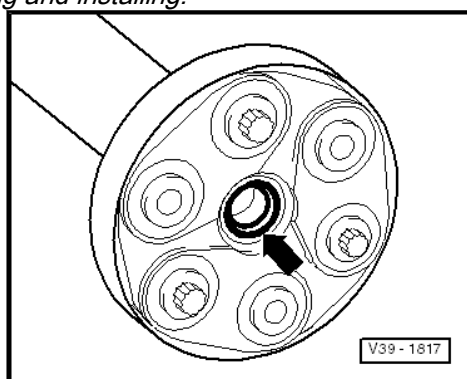


- Remove the pendulum support from the transmission.

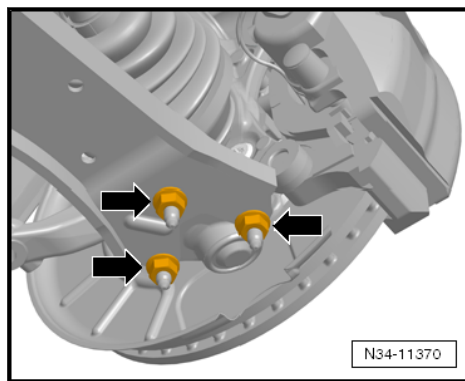


Note

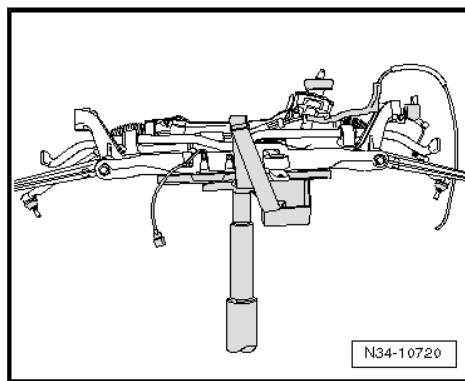
After loosening the pendulum support bolts, the engine/transmission assembly swings forward slightly (toward the front end). Make sure that the seal -arrow- in the driveshaft flange is not damaged when removing and installing.



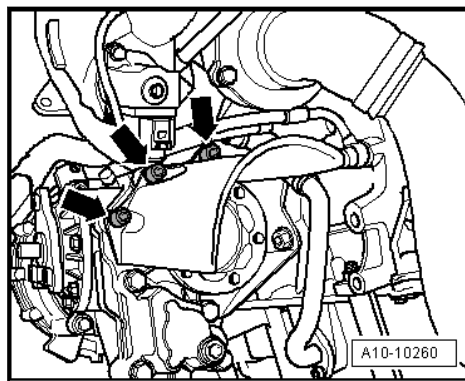
- Push the engine/transmission assembly slightly forward (toward the front end) and pull the driveshaft off the bevel box.
- Lift the driveshaft and secure it.
- Remove the left and right coupling rods from the stabilizer bar.
- Remove the nuts -arrows- for the ball joint on the control arm.



- Secure the subframe before removing. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Subframe, Stabilizer Bar and Control Arm; Subframe and Brackets, Securing.
- Remove the subframe and pendulum support, the stabilizer bar, the mounts, the steering gear and control arms. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Overview - Subframe, Stabilizer Bar and Control Arms.



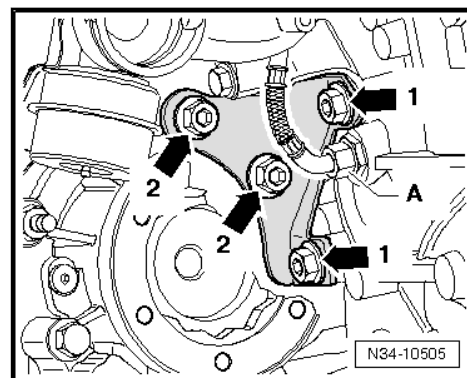
- Remove the drive axle heat shield from the bevel box -arrows-.



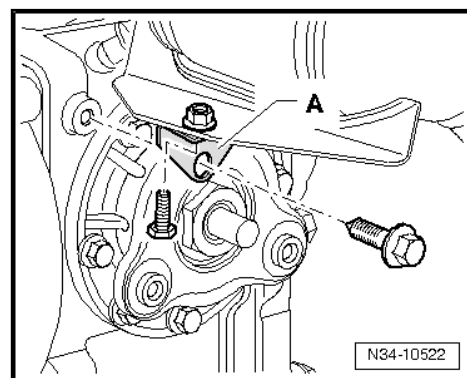
- Remove left and right drive axles from the transmission flange shafts. Secure the drive axles. Do not damage the protective coating while doing so.



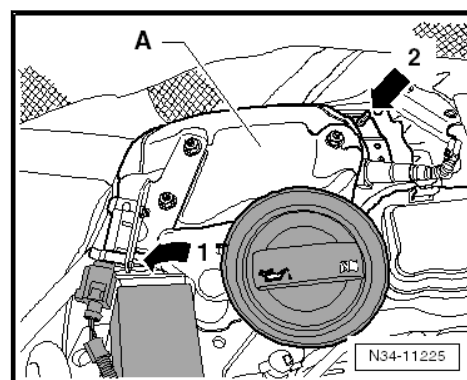
Vehicles without Particulate Filter



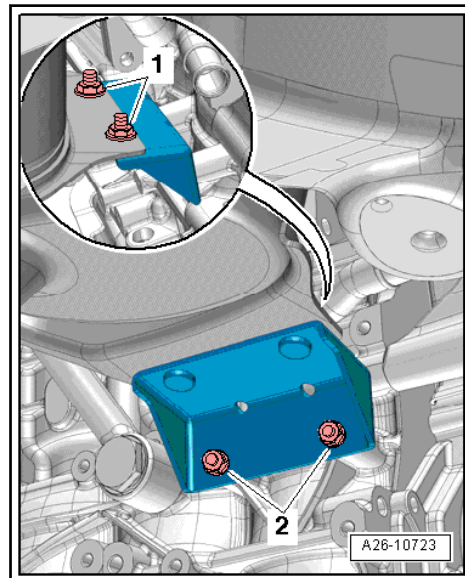
- Remove the turbocharger oil return line -A- from the engine. Refer to ⇒ Rep. Gr. 21; Charge Air System with Turbocharger; Overview - Turbocharger.
- Remove the transmission support bolts from the engine and bevel box -1 arrows- and -2 arrows-.
- Remove the transmission support.
- If equipped, remove the exhaust system support -A-. Refer to ⇒ Rep. Gr. 26; Exhaust System.



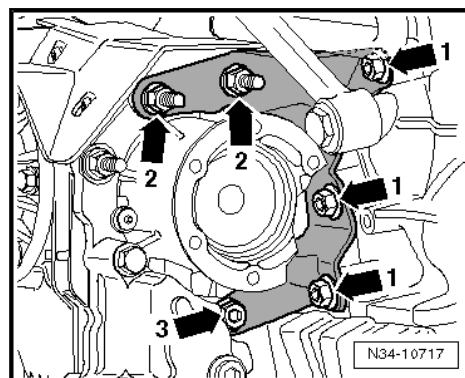
Vehicles with Particulate Filter



- Remove the upper particulate filter -A- from the engine -arrow 1- and from under the turbocharger -arrow 2-. Refer to ⇒ Rep. Gr. 26; Exhaust System.
- Loosen the nuts -1- and remove the nuts -2- to remove the particulate filter bracket from the engine.



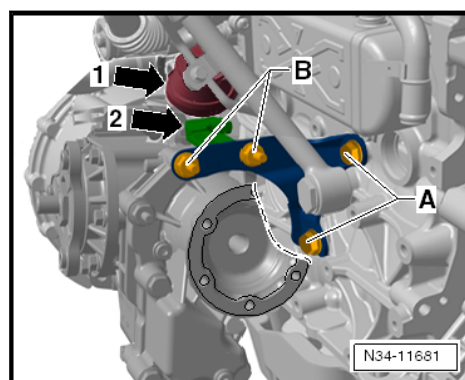
- Then tie up the particulate filter on the plenum chamber bulkhead.



- Remove the transmission support bolts from the engine and bevel box -1 arrows-, -2 arrows- and -3 arrows-.

First remove the transmission support, when the transmission is removed from the engine.

Vehicles with a vacuum diaphragm from 11/2009 -arrow 1-



After 11/2009, a brace -arrow 2- is installed under the vacuum diaphragm -arrow 1- at the top of the transmission support (gradual introduction).

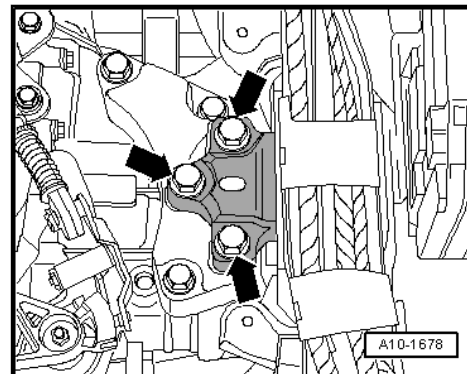
- Loosen the transmission support bolts -A- from the engine.



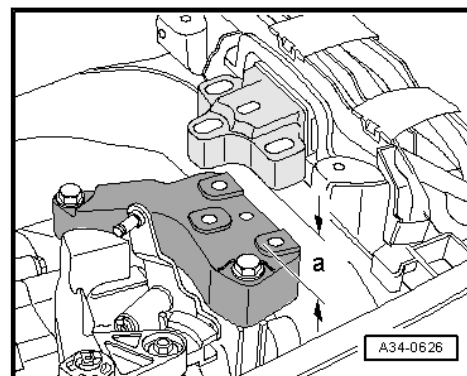
- Remove the transmission support bolts -B- from the bevel box.

Continuation for All

- Remove the assembly mount bolts -arrows- on the transmission.



- Turn the spindles on the Engine Support Bridge -10 - 222 A- to lower the transmission by dimension -a-.



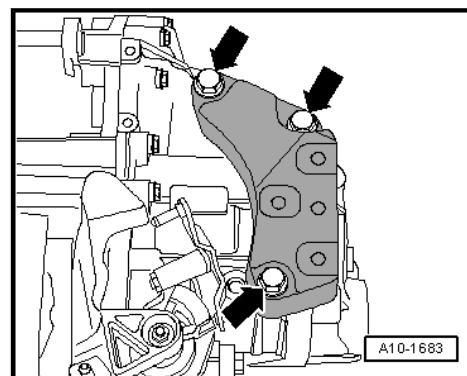
- Dimension -a- = approximately 60 mm



Note

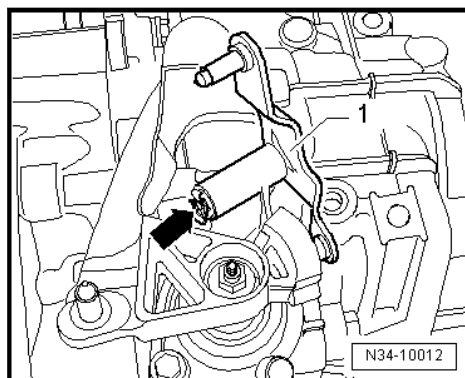
When moving the engine/transmission assembly, be aware of the coolant hoses between the engine and heater core; do not stretch it.

- Remove the bracket from the transmission -arrows-.





Metal Relay Lever



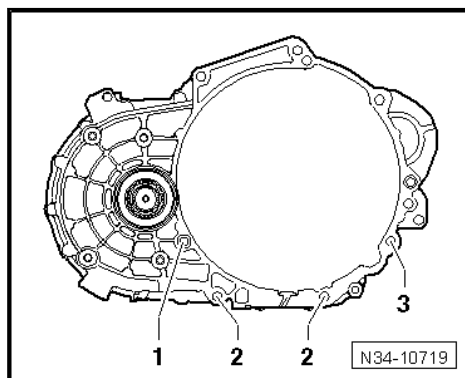
- Remove the lock washer -arrow- from the relay lever -1- and then remove the relay lever.

Plastic Relay Lever

- Remove the relay lever with the cable retainer. Refer to ➤ [R1.8 relay Lever”, page 108](#) .

Continuation for All

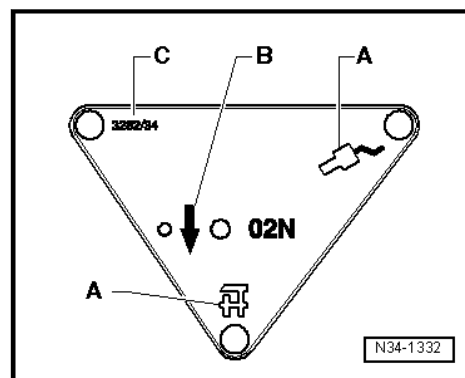
- Remove the gearshift lever from the gearshift shaft.
- Remove the lower engine/transmission connecting bolts -1- and -2- (engine side).



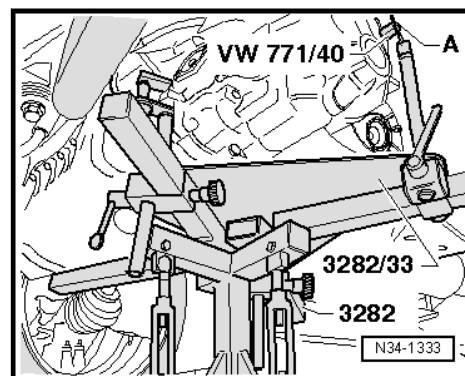
Note

Loosen the engine/transmission connecting bolt -3- and leave it in so that it is hand-tight.

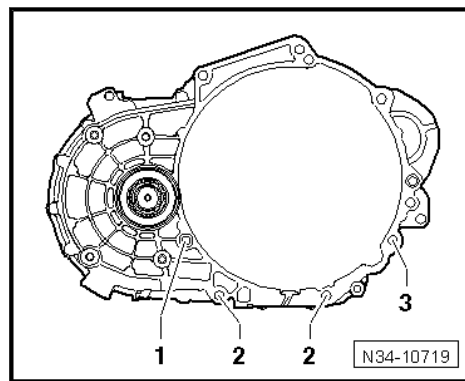
Align the Transmission Support -3282- with the Transmission Support - Mounting Plate 33 -3282/33- in order to remove the “02Q AWD” transmission.



- Insert the Transmission Support -3282- into the Engine and Gearbox Jack -VAS 6931-.
- Align the arms of the Transmission Support so that they align with the holes in the Adjusting Plate.
- Install the Mounting Elements -A- as shown on the Adjusting Plate.
- Install the Transmission Support - Pins 29 -3282/29- instead of the Mounting Element -C-.
- Position the Engine and Gearbox Jack -VAS 6931- under the vehicle. The arrow symbol -B- on the Adjusting Plate points in the direction of travel.
- Align the Adjusting Plate and transmission so that they are parallel to each other.
- Install the Transmission Support - Pins 29 -3282/29- into the hole on the transmission for the pendulum support bolt.
- Secure the Slide Hammer Set - Adapter 40 -VW 771/40- inside the threaded hole in the transmission housing as shown.

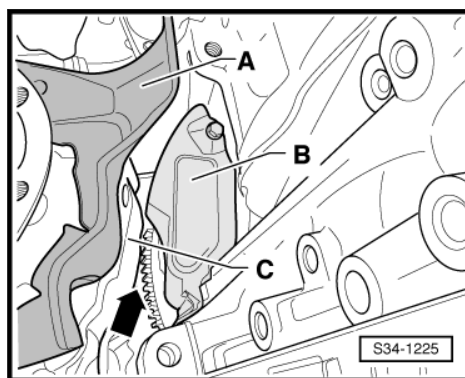


- Secure the transmission on the Transmission Support -3282- with an M10 x 20 bolt -A-.
- Remove the last engine/transmission connecting bolt -3-.



- Separate the transmission from the engine.

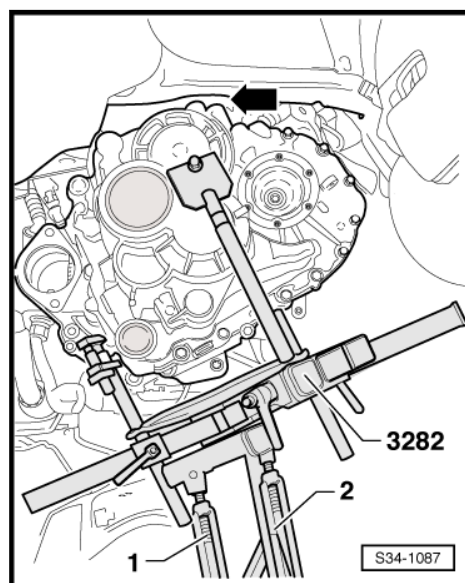
Vehicles with Particulate Filter



- Remove the transmission support -A- from the bevel box -C-.

Continuation for All

- Move the transmission near the differential/bevel box slightly towards the rear, so that the small cover plate -B- or the intermediate plate is not damaged.
- Then guide the transmission past the flywheel -arrow-.
- Then turn the transmission using the spindles -1- and -2- for the Transmission Support -3282- so that it does not touch the longitudinal member.





- Carefully lower the transmission.



Note

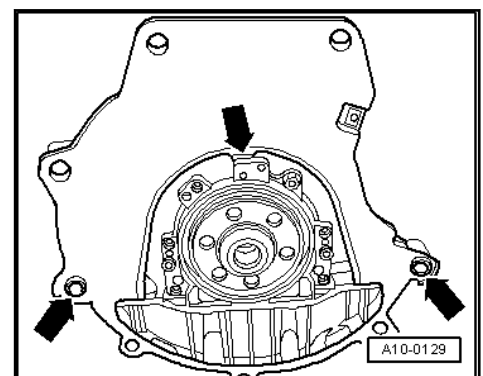
Pay attention to all of the lines when lowering the transmission.

5.1.2 Transmission, Installing



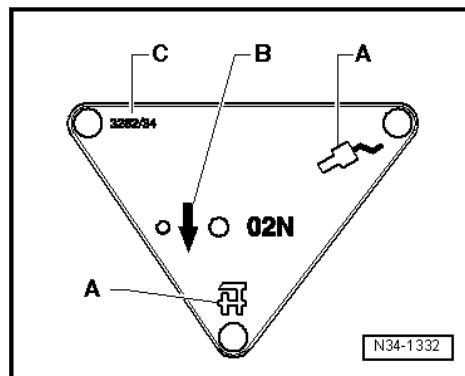
Note

- ◆ Refer to “Transmission, Removing” to get a list of the special tools needed ⇒ [R5.1 removing and Installing, Vehicles with Turbo Diesel Engine](#), page 213 .
 - ◆ Replace the self-locking nuts and bolts.
 - ◆ Replace any bolts that were tightened with an additional turn.
 - ◆ Install any cable ties that were loosened or cut off during removal at their same location.
 - ◆ Clean the input shaft splines and the hub splines (on a used clutch plate), remove any corrosion and only apply a very thin layer of Lubricating Grease for Clutch Plate Splines -G 000 100- on the splines. Then move the clutch plate back and forth on the input shaft until the hub moves freely on the shaft. Excess grease must be removed.
- If the transmission is replaced, transfer the shift lever and the relay lever.
 - Clean any locking compound residue from all threaded holes using a tap.
 - Check whether there are centering sleeves for the engine/transmission in the cylinder block; install if necessary.
- If the alignment sleeves are missing, it will be difficult to shift, there will be clutch problems and the transmission may make noises (loose rattling).
- Make sure the intermediate plate is engaged on the sealing flange and pushed onto the alignment sleeves -arrows-.

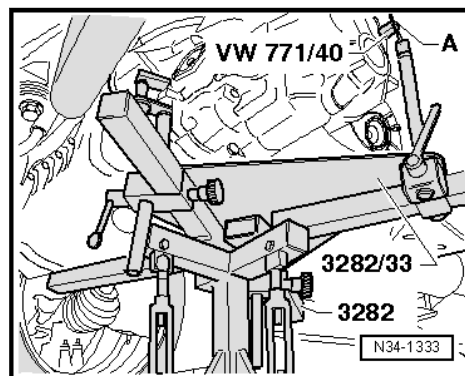


- Check the release bearing for wear. Replace the clutch slave cylinder with release bearing if necessary. Refer to ⇒ [S3.2 slave Cylinder with Release Bearing, Removing and Installing](#), page 60 .

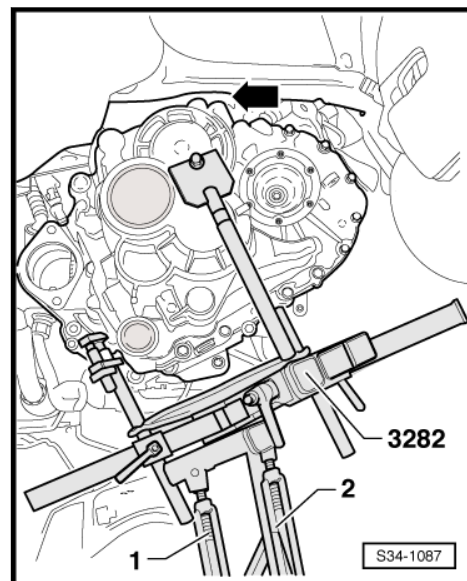
Align the Transmission Support -3282- with the Transmission Support - Mounting Plate 33 -3282/33- in order to install the “02Q AWD” transmission.



- Align the Transmission Support arms so that they align with the holes in the Adjusting Plate.
- Install the Mounting Elements -A- as shown on the Adjusting Plate.
- Install the Transmission Support - Pins 29 -3282/29- instead of the Mounting Element -C-.
- Place the transmission on the Engine and Gearbox Jack -VAS 6931-.
- Align the Adjusting Plate and transmission so that they are parallel to each other.
- Install the Transmission Support - Pins 29 -3282/29- into the hole on the transmission for the pendulum support bolt.
- Secure the Slide Hammer Set - Adapter 40 -VW 771/40- inside the threaded hole in the transmission housing as shown.

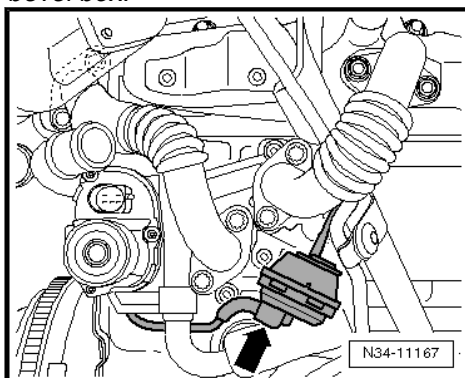


- Secure the transmission on the Transmission Support -3282- with an M10 x 20 bolt -A-.
- Position the Engine and Gearbox Jack -VAS 6931- under the vehicle. The arrow on the adjusting plate points in the direction of travel.
- Position the transmission slightly upwards -arrow- in the area near the differential/bevel box using the spindles -1- and -2- for the Transmission Support -3282-.

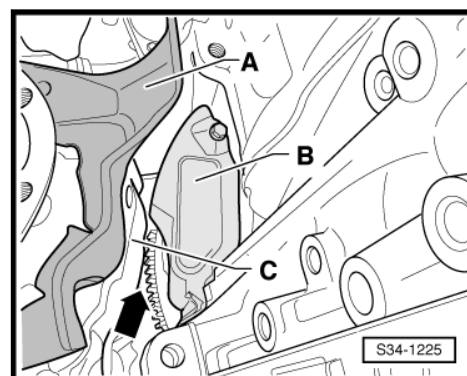


Note

- ◆ Pay attention to all of the lines when installing the transmission.
- ◆ On vehicles with vacuum diaphragm -arrow- when installing do not bump with the bevel box.



Vehicles with Particulate Filter

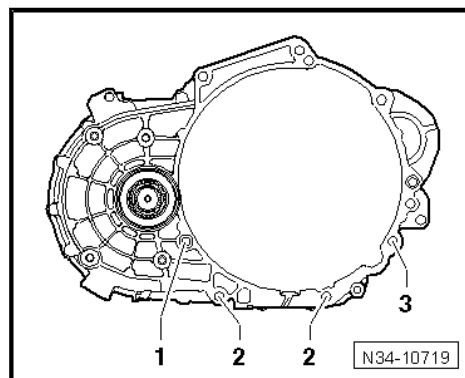


- Place the transmission support -A- before inserting the transmission on the bevel box -C-.



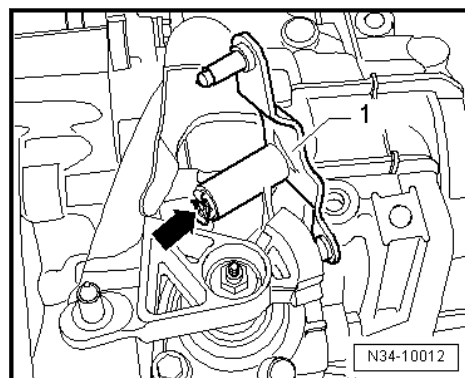
Continuation for All

- Guide past the transmission with inserting on the flywheel -arrow- and the small cover plate -B- or intermediate plate.
- Align the transmission to the engine and install.
- Install the engine/transmission connecting bolts -1 through 3- and tighten them to the tightening specification. Refer to ➤ [S5.1.3 pecifications", page 243](#) .



- After the transmission is attached to the bottom of the engine, remove the Transmission Support -3282- from the transmission.
- Attach the shift lever to the transmission gearshift shaft (refer to ➤ [Fig. ""Shift Lever, Installing""", page 105](#)) and tighten the hex nut to the tightening specification ➤ [Item 17 \(page 104\)](#) .

Metal Relay Lever



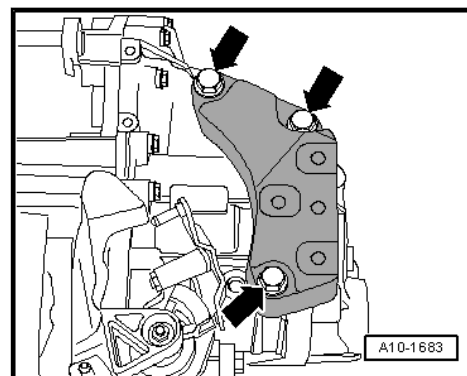
- Insert the relay lever -1- and clip in the lock washer -arrow-.

Plastic Relay Lever

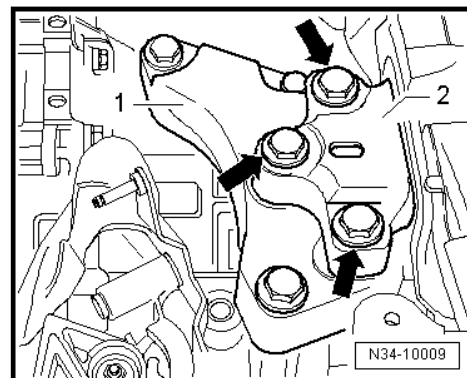
- Install the relay lever with the cable retainer. Refer to ➤ [R1.8 elay Lever", page 108](#) .



Continuation for All



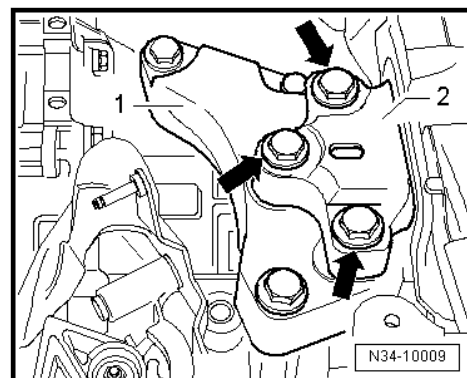
- Attach the bracket to the transmission using the new hex bolts -arrows- and then tighten them to the tightening specification. Refer to [⇒ S5.1.3 specifications, page 243](#).
- Align the engine/transmission in its installation position. To do this, tighten the spindles of the Engine Support Bridge -10 - 222 A- until the bracket -1- is in complete contact with the transmission mount -2-.



Note

The transmission mount and bracket must be parallel to one another to prevent any damage to the thread in the bracket.

- Install the new hex bolts -arrows- for the transmission mount -2- on the bracket -1- and tighten to the tightening specification. Refer to [⇒ S5.1.3 specifications, page 243](#).





WARNING

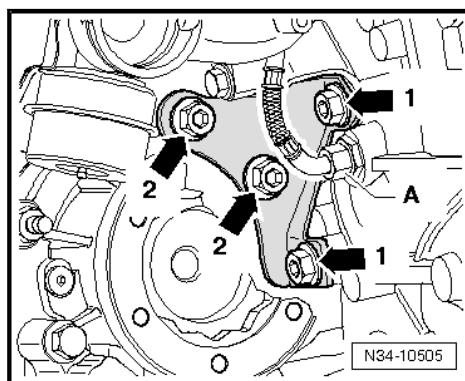
Only remove the Engine Support Bridge -10 - 222 A- if all of the bolts for the assembly mount are tightened to the tightening specification.



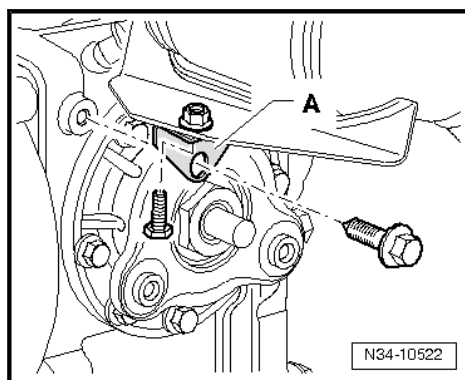
Note

Install the engine/transmission mount free of tension. Refer to ⇒ Rep. Gr. 10; Engine, Removing and Installing.

Vehicles without Particulate Filter

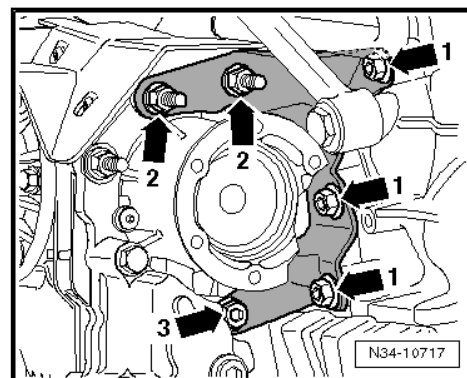


- Attach the bevel box transmission support to the engine. Follow the tightening sequence when installing the bolts -arrows 1- and -arrows 2-. Refer to ⇒ [S5.1.3 specifications](#), page 243.
- Attach the turbocharger oil return line -A- to the engine. Refer to ⇒ Rep. Gr. 21; Charge Air System with Turbocharger; Overview - Turbocharger.
- If equipped, install the exhaust system support -A-. Refer to ⇒ Rep. Gr. 26; Exhaust System.





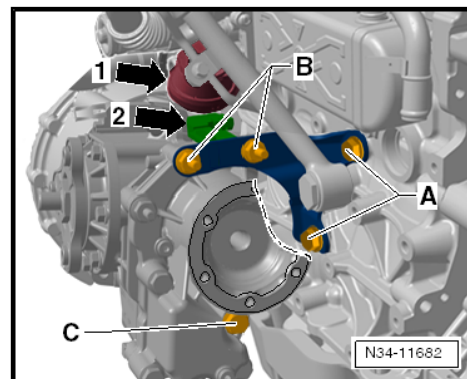
Vehicles with Particulate Filter



- Attach the bevel box transmission support to the engine and bevel box. Pay attention to the tightening sequence for the bolts -1 arrows-, -2 arrows- and -3 arrows-. Refer to ➤ [S5.1.3 specifications", page 243](#) .

The bolt heads may be different from those shown.

Vehicles with a vacuum diaphragm from 11/2009 -arrow 1-

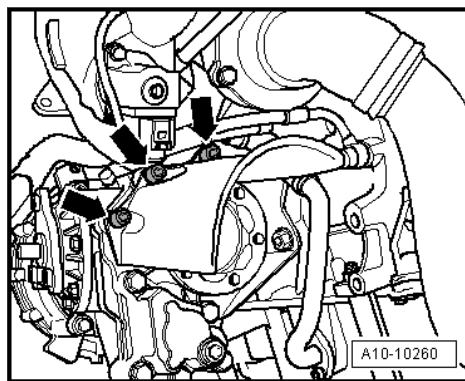


After 11/2009, a brace -arrow 2- is installed under the vacuum diaphragm -arrow 1- at the top of the transmission support (gradual introduction).

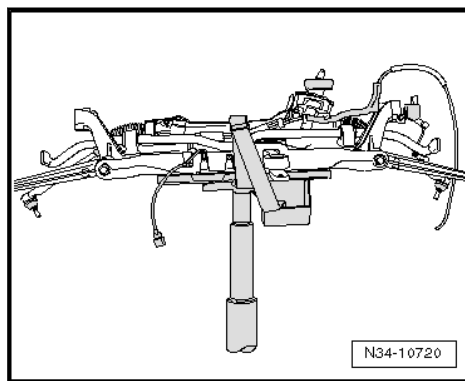
- Attach the bevel box transmission support to the engine and bevel box. At the same time, pay attention to the tightening sequence for the bolts -A- and -B- ➤ [S5.1.3 specifications", page 243](#) .
- The bolt -C- must be installed.
- Attach the particulate filter with the particulate filter bracket to the engine. Refer to ➤ Rep. Gr. 26; Exhaust System.

Continuation for All

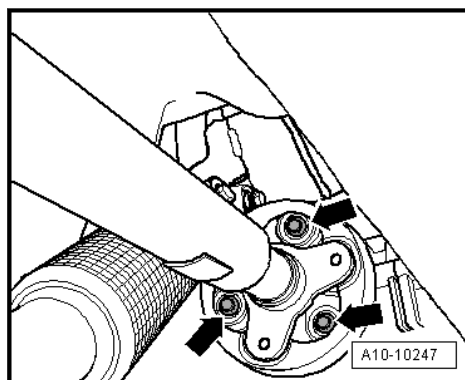
- Mount the right and left drive axles to the transmission. Refer to ➤ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axles, Removing and Installing.



- Install the drive axle heat shield on the bevel box -arrows-. Refer to ➔ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Shaft Servicing - Drive Shaft Overview.
- Install the subframe and pendulum support, the stabilizer bar, the mounts, the steering gear and control arms. Refer to ➔ Suspension, Wheels, Steering; Rep. Gr. 40; Overview - Subframe, Stabilizer Bar and Control Arms.



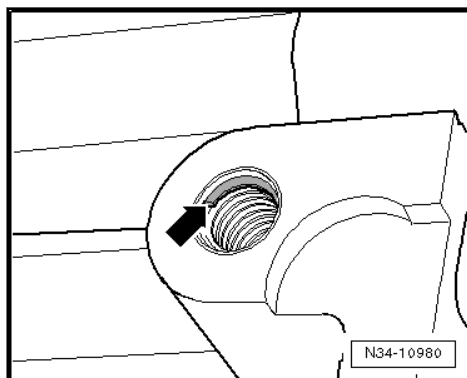
- Attach the driveshaft with the flexible disc to the bevel box flange -arrows-. Refer to ➔ Rep. Gr. 39; Driveshaft; Driveshaft, Removing and Installing.





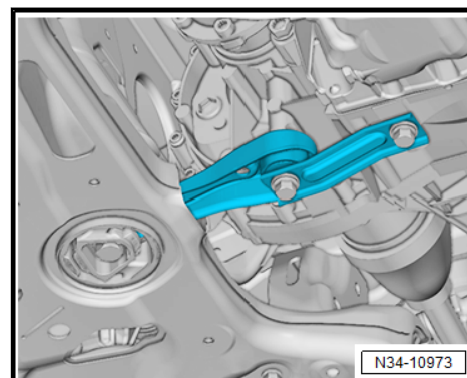
Note

- ◆ The holes for the pendulum support in transmissions from 05/28/2007 have threaded inserts (for example, "Heli Coil").
- ◆ Identifying feature: there is a collar on the first thread -arrow-.

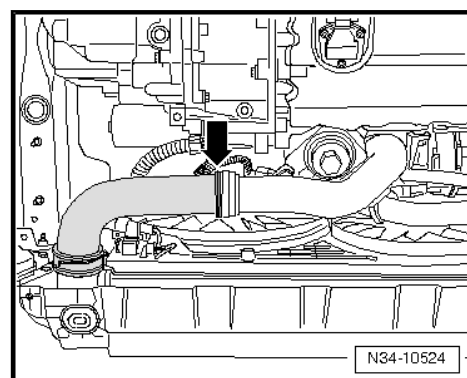


Observe the correct bolts and tightening specifications. Refer to ➤ Suspension, Wheels, Steering; Rep. Gr. 40; Overview - Subframe, Stabilizer Bar and Control Arms.

- Attach the pendulum support to the transmission. Refer to ➤ Suspension, Wheels, Steering; Rep. Gr. 40; Overview - Subframe, Stabilizer Bar and Control Arms.

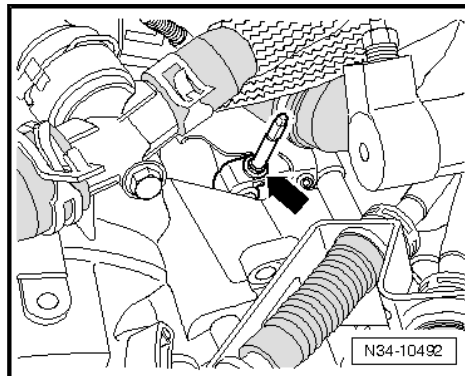


- Assemble the exhaust system and then attach the exhaust system bracket to the subframe. Refer to ➤ Rep. Gr. 26; Exhaust System.
- Attach the charge air hose -arrow-. Refer to ➤ Rep. Gr. 21; Charge Air System with Turbocharger; Overview - Charge Air Cooling Components.

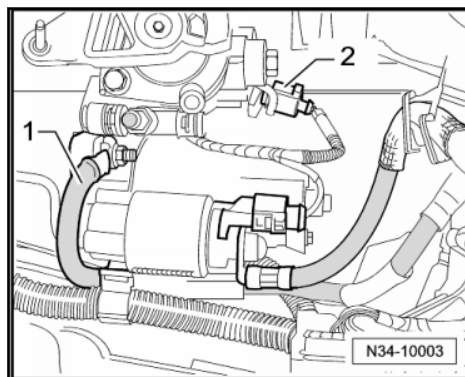




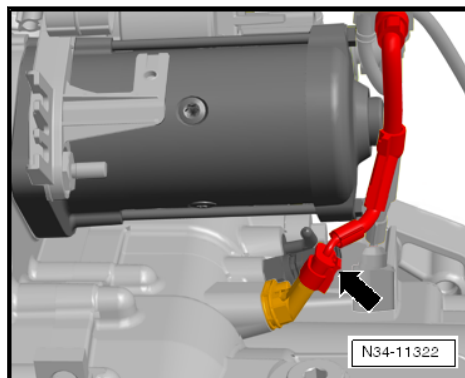
- Install the upper engine/transmission connecting bolts and tighten them to the tightening specification. Refer to [S5.1.3 specifications](#), page 243.
- If equipped, install the bleed pipe -arrow- in the bevel box and tighten to 10 Nm.



- Then insert the starter and secure it with the lower bolt. Refer to ➤ Electrical Equipment; Rep. Gr. 27; Starter; Starter, Removing and Installing.
- Attach the bracket for the wires to the lower starter bolt.
- Install the upper starter bolt and connect the connectors and wires to the starter. Refer to ➤ Electrical Equipment; Rep. Gr. 27; Starter; Starter, Removing and Installing.
- Secure the ground wire -1- to the upper starter bolt.

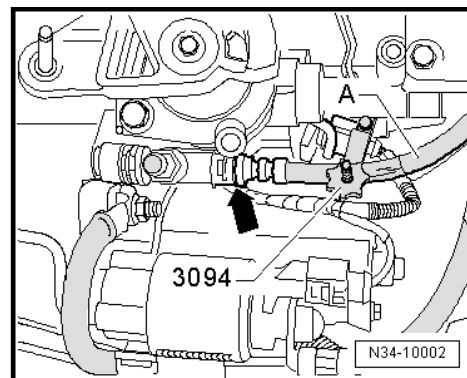


- Connect the connector -2- to the Back-Up Lamp Switch -F4-.
- Transmission for vehicles with Start/Stop System: connect the connector -arrow- to the Transmission Neutral Position Sensor -G701-.

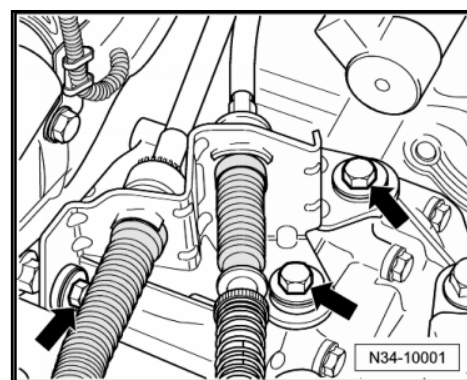




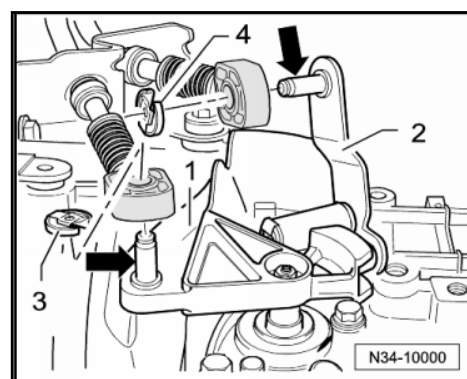
- Push the hose/line assembly or pipe -A- into the bleeder/clutch slave cylinder to the stop and push the clamp -arrow- downward.



- Pull on the line to make sure it is secure.
- Remove the Hose Clamps - Up To 25mm -3094- from the hose/line assembly or from the supply hose.
- After removing the Hose Clamps - Up To 25mm -3094-, form the hose back to its original shape.
- Bleed the clutch mechanism. Refer to ➤ [M2.9 echanism, Bleeding", page 55](#) .
- Make sure the vacuum hose for the brake system is installed correctly. Refer to ➤ Brake System; Rep. Gr. 47; Hydraulic System.
- Attach the cable bracket to the transmission and tighten the bolts or nuts -arrows- to the tightening specification ➤ [Item 6 \(page 103\)](#) and ➤ [Item 10 \(page 103\)](#) .



- Apply a small amount of grease to the pin -arrow- on the shift lever -1-.





Refer to the ⇒ Electronic Parts Catalog (ETKA) for the grease allocation.

- Slide the shift cable onto the pins -arrow- and secure it with a new lock washer -3-.

Metal Relay Lever

- Apply a small amount of grease to the pin -arrow- on the relay lever -2-.

Refer to the ⇒ Electronic Parts Catalog (ETKA) for the grease allocation.

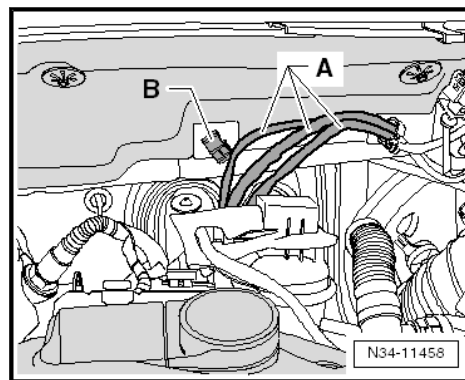
- Slide the selector cable onto the respective pins -arrow- and secure it with a new lock washer -4-.

Plastic Relay Lever

- Insert the selector cable into the cable retainer.

Continuation for All

- Adjust the gearshift mechanism. Refer to ⇒ [M1.11 echanism, Adjusting](#), page 121 .
- Secure the lines -A- to the bracket -B-.

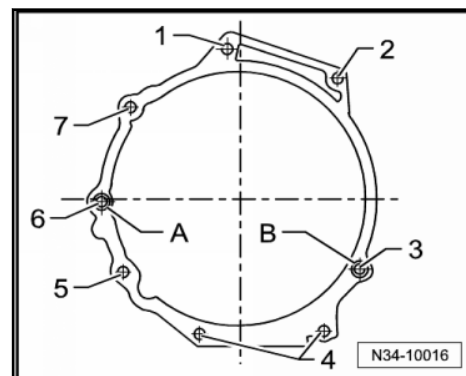


- Install the engine cover if necessary.
- If removed, install the entire air filter housing. Refer to ⇒ Rep. Gr. 23; Diesel Direct Fuel Injection System, Servicing; Overview - Air Filter.
- Connect the battery and follow the steps after the battery is connected. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Disconnecting and Connecting.
- Check the transmission fluid level in the manual transmission. Refer to ⇒ [F8 fluid, Checking](#), page 252 .
- Check the gear oil in the bevel box. Refer to ⇒ [O10 il in Bevel Box, Checking or Filling](#), page 294 .
- Install the lower section of the left front wheel housing liner. Refer to ⇒ Body Exterior; Rep. Gr. 66; Wheel Housing Liner.
- Install the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 50; Noise Insulation.
- Install the wheels. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 44; Wheel Bolts Tightening Specifications.
- Check the headlamp adjustment if the vehicle has a Left Front Level Control System Sensor -G78-. Refer to ⇒ Electrical Equipment; Rep. Gr. 94; Exterior Lamps, Bulbs, Switches.



5.1.3 Tightening Specifications

Transmission to engine (engine flange face)

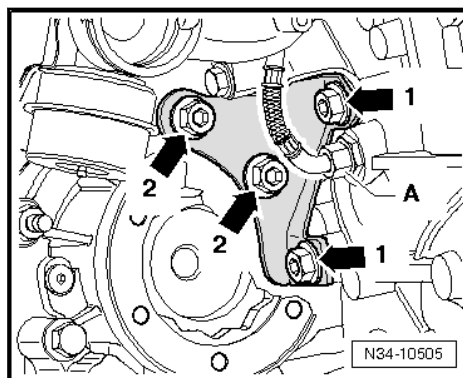


Item	Bolt	Quantity	Nm
1	M12 x 55 ◆ With a short M8 threaded pin	1	80
2	M12 x 55 ◆ With a long M8 threaded pin	1	80
3	M12 x 70 or M12 x 65	1	80
4	M10 x 50	2	40
5	M10 x 105	1	40
6	M12 x 165 ◆ With a short M8 threaded pin ◆ Also starter to transmission	1	80
7	M12 x 165 ◆ With a short M8 threaded pin ◆ Also starter to transmission	1	80
-	M6 x 8 ◆ Small flywheel cover plate (not present on all engines)	1	10

Item -A- and item -B-: alignment sleeves



Vehicles without Particulate Filter

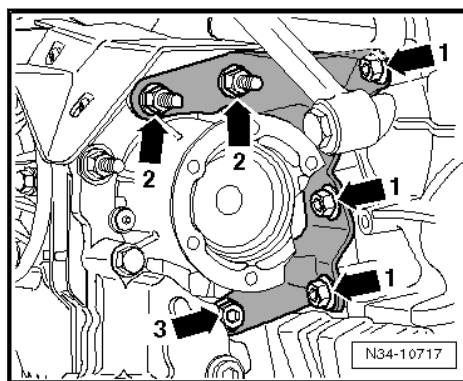


Install the transmission mount.

The following assembly sequence must be followed when installing the transmission support:

- Install the bolts -arrows 1- hand-tight.
- Tighten the bolts -arrows 2- to 40 Nm.
- Tighten the bolts -arrows 1- to 40 Nm.

Vehicles with Particulate Filter



Install the transmission mount.

Allocation of bolts

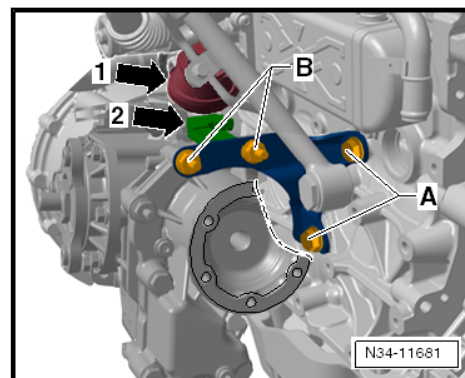
Item	Bolt	Quantity
1	M10 x 21	3
2	M10 x 45	2
3	M10 x 62	1

The following assembly sequence must be followed when installing the transmission support:

- Hand-tighten all bolts.
- Tighten the bolts -arrows 2- and -arrow 3- to 40 Nm.
- Tighten the bolts -arrows 1- to 40 Nm.



Vehicles with a vacuum diaphragm from 11/2009 -arrow 1-



From 11/2009, a »brace« -arrow 2- is installed under the vacuum diaphragm -arrow 1- at the top of the transmission support (gradual introduction).

Allocation of bolts

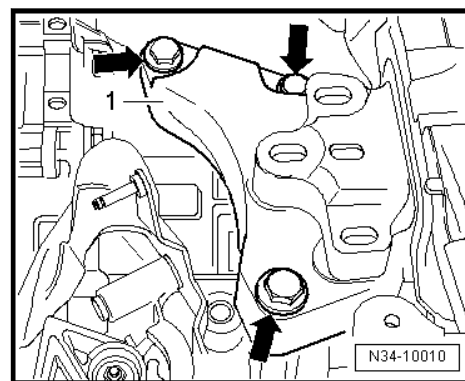
Item	Bolt	Quantity
A	M10 x 21	2
B	M10 x 45	2

The following assembly sequence must be followed when installing the transmission support:

- Hand-tighten all bolts.
- Tighten the bolts -A- to 40 Nm.
- Tighten the bolts -B- to 40 Nm.

Continuation for All

Transmission bracket -1- to transmission

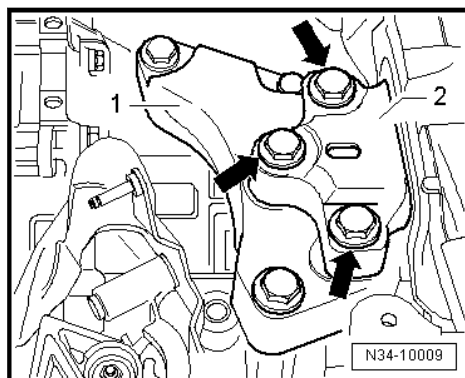


- Replace the bolts.

Tighten the bolts -arrows-: 60 Nm + 90°.



Transmission to body



- Replace the bolts.

Tighten the bolts -arrows-: 60 Nm + 90°.



Note

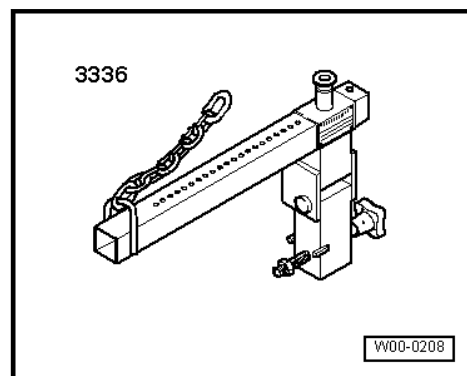
*Install the engine/transmission mount free of tension. Refer to
⇒ Rep. Gr. 10; Engine, Removing and Installing.*

6 Transmission, Transporting

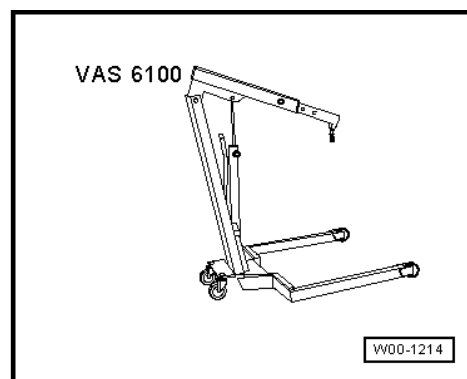
6.1 FWD Transmission, Transporting

Special tools and workshop equipment required

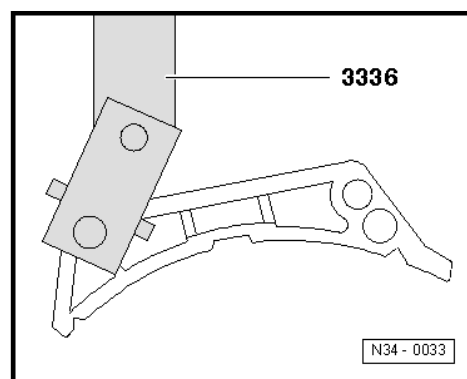
- ◆ Transmission Support Jig -3336-



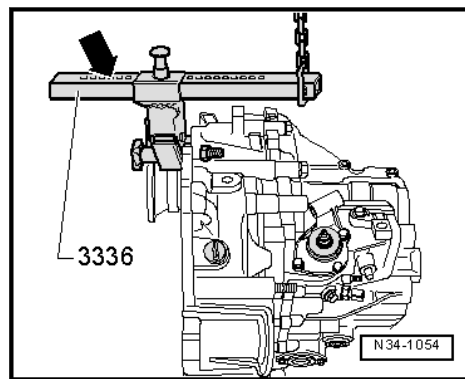
- ◆ Shop Crane -VAS 6100-



- Attach the Transmission Support Jig -3336- to the clutch housing.



- Move the support arm on the sliding bar using the locking bolt -arrow-.



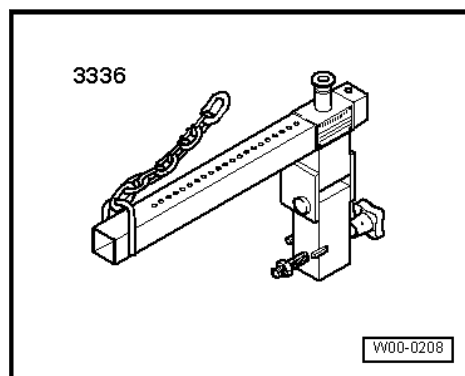
Number of visible holes = 6.

- Lift the transmission using a workshop crane and the Transmission Support Jig -3336-.
- Set the transmission down, for example, into the transport container.

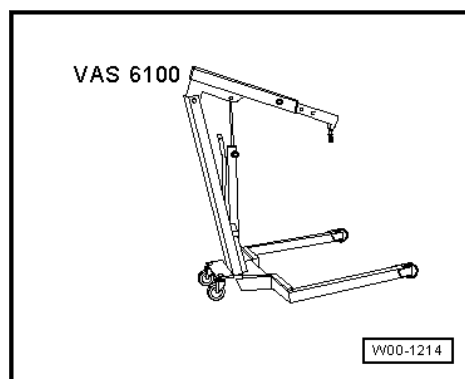
6.2 AWD Transmission, Transporting

Special tools and workshop equipment required

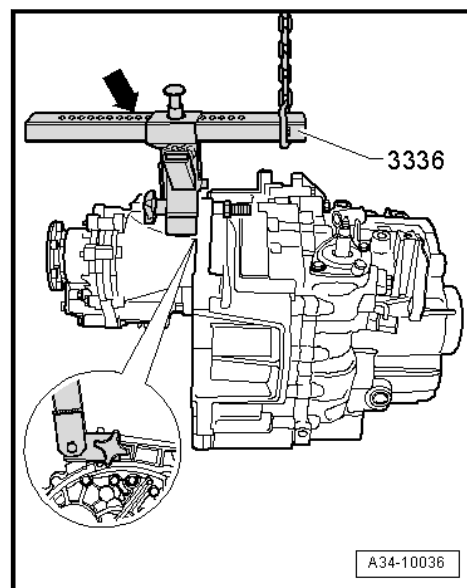
- ◆ Transmission Support Jig -3336-



- ◆ Shop Crane -VAS 6100-



- Attach the Transmission Support Jig -3336- to the clutch housing.
- Move the support arm on the sliding bar using the locking bolt -arrow-.



Number of visible holes = 9.

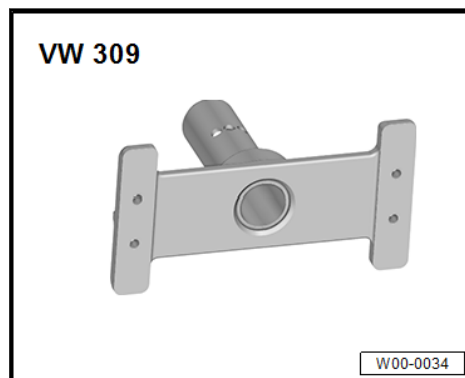
- Lift the transmission using a workshop crane and the Transmission Support Jig -3336-.
- Set the transmission down, for example, into the transport container.



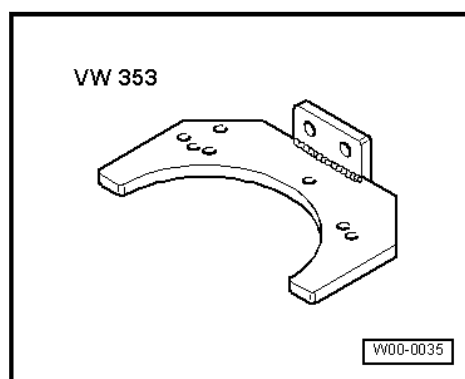
7 Transmission, Securing to Engine/Transmission Holder

Special tools and workshop equipment required

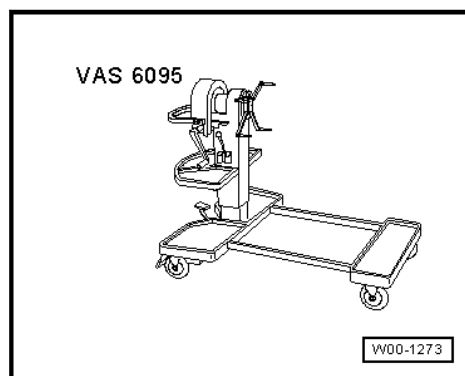
- ◆ Holding Plate -VW 309A-



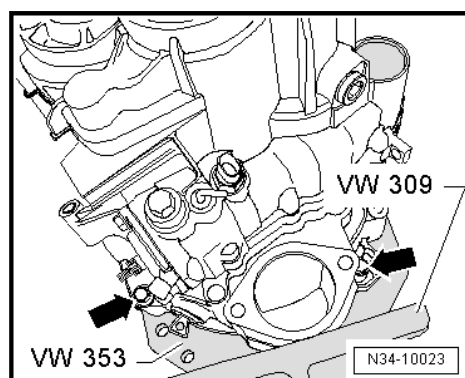
- ◆ Transmission Support -VW 353-



- ◆ Engine and Gearbox Bracket -VAS 6095A-



Procedure





- Secure the transmission with the Transmission Support -VW 353- to the Holding Plate -VW 309- -arrows-.
- Insert the Holding Plate - VW 309- in the Engine and Gear-box Bracket -VAS 6095A-.



8 Transmission Fluid, Checking

⇒ [F8.1 Fluid Level, Checking, Manual Transmission with Fluid Filler Plug", page 252](#)

⇒ [F8.2 Fluid Level, Checking, Manual Transmission without Fluid Filler Plug", page 253](#)

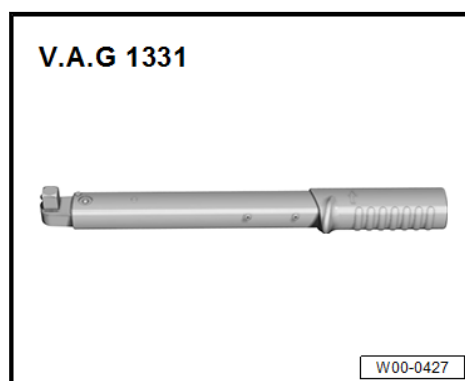
⇒ [F8.3 Fluid, Draining and Filling, Only Manual Transmission without Fluid Filler Plug", page 254](#)

⇒ [F8.4 Oil or Drain Plug Tightening Specification", page 256](#)

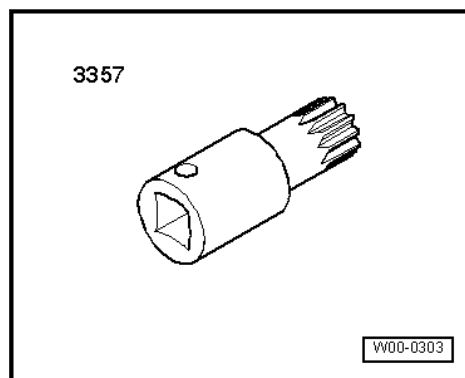
8.1 Transmission Fluid Level, Checking, Manual Transmission with Fluid Filler Plug

Special tools and workshop equipment required

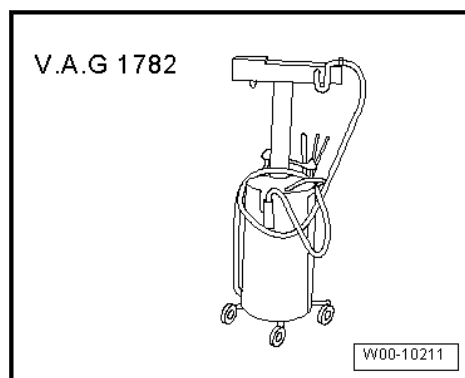
◆ Torque Wrench 1331 5-50Nm -V.A.G 1331-



◆ Triple Square Socket Driver -3357-

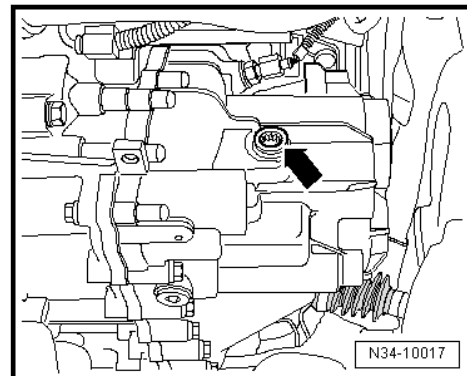


◆ Used Oil Collection and Extraction Unit -SMN372500-



Transmission fluid specification. Refer to the ⇒ Electronic Parts Catalog (ETKA).

- Remove the noise insulation. Refer to ➔ Body Exterior; Rep. Gr. 50; Noise Insulation.
- Place the Used Oil Collection and Extraction Unit - SMN372500- under the transmission.
- Remove the plug for checking the transmission fluid -arrow-.



The level is correct when the transmission fluid comes up to the bottom edge of the fluid filler hole.

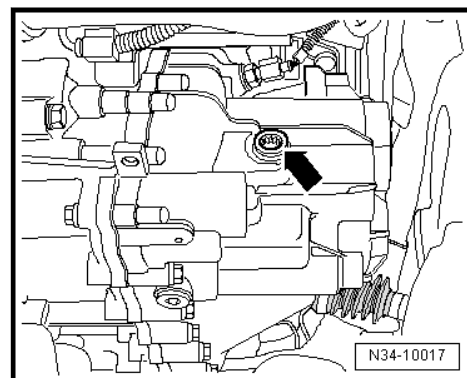
- Install the bolt -arrow- with a new seal.
- Tighten the bolt -arrow- to the tightening specification. Refer to ➔ Fig. [“Different Versions of Fluid Fill or Drain Plug”](#), page 256 .

Note the following when filling for the first time:

- Remove the plug -arrow-.
- Add transmission fluid until it reaches the lower edge of the filler hole.
- Install the bolt -arrow- with a new seal.
- Tighten the bolt -arrow- to the tightening specification. Refer to ➔ Fig. [“Different Versions of Fluid Fill or Drain Plug”](#), page 256 .
- Install the noise insulation. Refer to ➔ Body Exterior; Rep. Gr. 50; Noise Insulation.

8.2 Transmission Fluid Level, Checking, Manual Transmission without Fluid Filler Plug

Checking the transmission fluid level on a manual transmission “without” a fluid drain plug -arrow- is performed as follows:



The transmission fluid level can only be checked when the transmission fluid has been drained completely and then refilled.

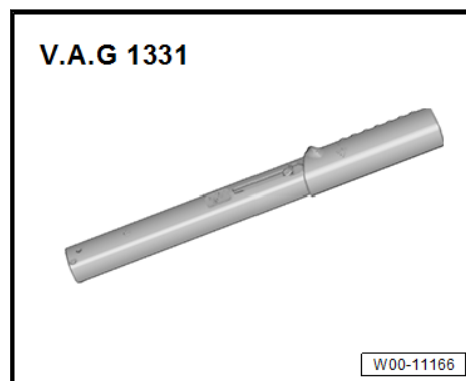


led. Refer to ➤ **F8.3 luid, Draining and Filling, Only Manual Transmission without Fluid Filler Plug**, page 254 .

8.3 Transmission Fluid, Draining and Filling, Only Manual Transmission “without” Fluid Filler Plug

Special tools and workshop equipment required

- ◆ Torque Wrench 1331 5-50Nm -V.A.G 1331-



- ◆ Hose (approximately 600 mm long, outer diameter: 18 mm) with commercially available funnel.
- ◆ Container with approximately 3.0L capacity with a scale

Transmission Fluid, Draining

Transmission fluid. Refer to the ➤ Electronic Parts Catalog (ET-KA).

- Remove the complete air filter housing if it is already located above the locking screw for the selector shaft.

Vehicles with Turbo Diesel Engine

- Refer to ➤ Rep. Gr. 23.

Vehicles with Gasoline Engine

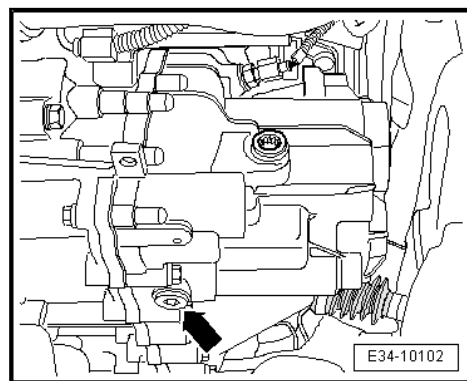
- Refer to ➤ Rep. Gr. 24.

Continuation for All

- Remove the noise insulation. Refer to ➤ Body Exterior; Rep. Gr. 50; Noise Insulation.

Clean the transmission

Use a clean container that holds three liters with a scale printed on it to catch the transmission fluid.



- Drain the transmission fluid by removing the fluid drain plug -arrow-.

- Install the oil drain plug. Refer to ➤ Fig. ““Different Versions of Fluid Fill or Drain Plug”, page 256”.

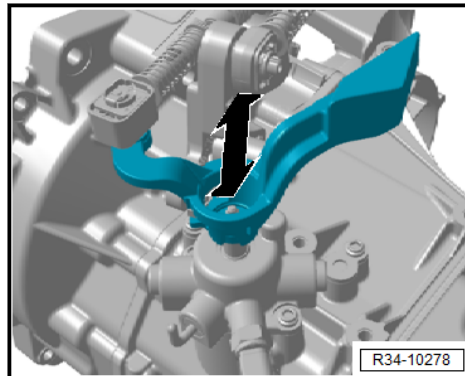
Transmission Fluid, Filling

- The oil drain plug is tightened to the tightening specification.

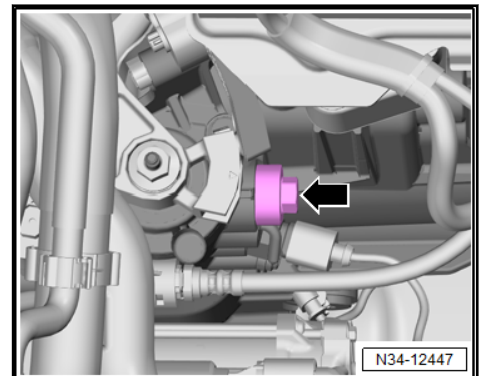
Transmission fluid. Refer to the ➤ Electronic Parts Catalog (ET-KA).

Fill the transmission fluid capacity into the container to 2.15 liters.

- The selector shaft is in neutral (shown here on a different transmission).



- Remove the locking bolt -arrow-.



- Hose (approximately 600 mm long, outside diameter 18 mm) with commercially available funnel.
- Insert the hose in the locating bore from the locking screw (second technician) and fill the transmission fluid.
- Install the new locking screw ➤ Item 12 (page 307) .
- If removed, install the complete air filter housing.

Vehicles with Turbo Diesel Engine

- Refer to ➤ Rep. Gr. 23.

Vehicles with Gasoline Engine

- Refer to ➤ Rep. Gr. 24.

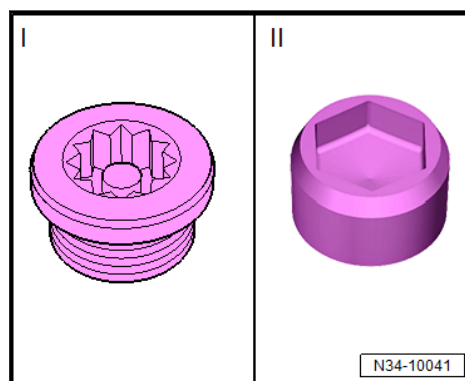
Continuation for All

- Remove the noise insulation. Refer to ➤ Body Exterior; Rep. Gr. 50; Noise Insulation.



8.4 Fluid Fill or Drain Plug Tightening Specification

Different Versions of Fluid Fill or Drain Plug



I - Fluid fill or drain plug with internal multi-point, 45 Nm

II - Fluid fill or drain plug with inner hex socket: 30 Nm

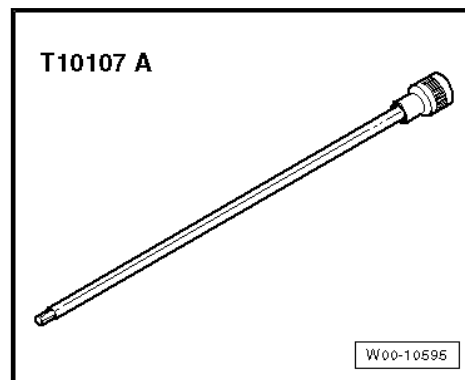


9 Bevel Box, Removing and Installing

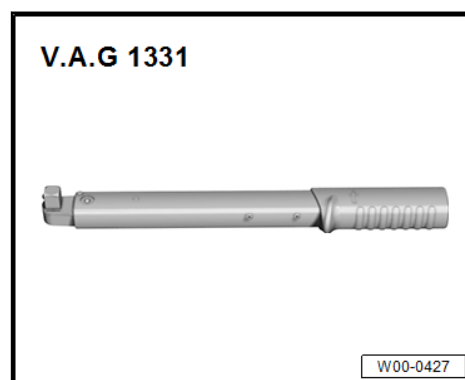
9.1 Bevel Box, TDI Without Particulate Filter, Removing and Installing

Special tools and workshop equipment required

- ◆ Socket and Extended Bit -T10107 A-



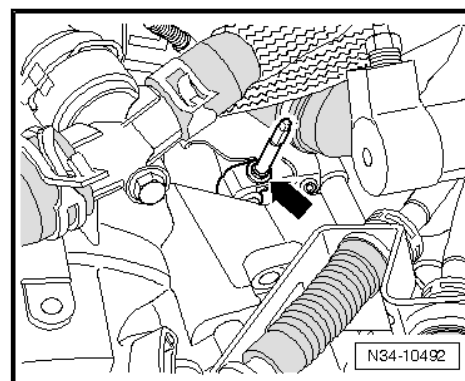
- ◆ Torque Wrench 1331 5-50Nm -V.A.G 1331-



- ◆ Determine the shift mechanism grease using the ⇒ Electronic Parts Catalog (ETKA).

9.1.1 Bevel Box, Removing

Check whether a bleed pipe -arrow- is installed on the bevel box.

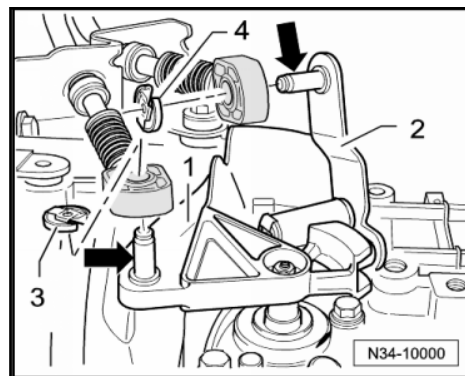


- Remove the entire air filter housing if necessary. Refer to ⇒ Rep. Gr. 23; Diesel Direct Injection System; Overview - Air Filter.

To remove breather tube, shift mechanism must be removed from transmission:



- Remove the shift cable lock washer -3- from the transmission shift lever -1- and remove the cable from the pin -arrow-.

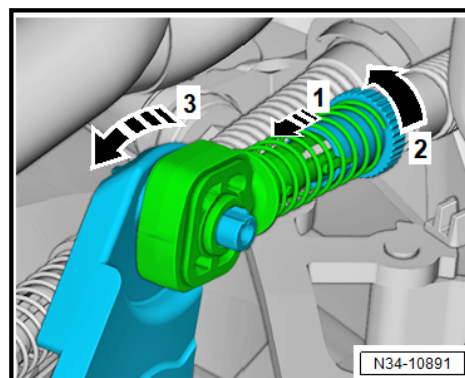


Metal Relay Lever

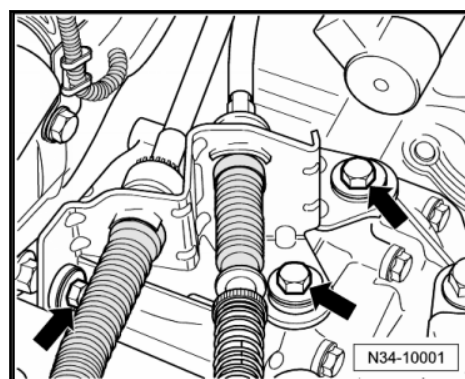
- Remove the selector cable lock washer -4- from the relay lever -2- and remove the cable from the pin -arrow-.

Plastic Relay Lever

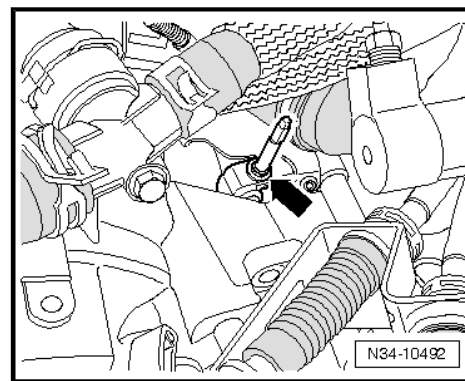
- Remove the cable retainer from the selector cable.



- To avoid damage to the selector cable, the cable retainer must be disconnected from the selector lever before removal.
- Pull the securing mechanism all the way forward in -direction of the arrow 1- and then unlock to the left in -direction of the arrow 2-.
- Press the relay lever forward (-direction of the arrow 3-).
- Remove the cable bracket from the transmission -arrows-, tie up to the side.

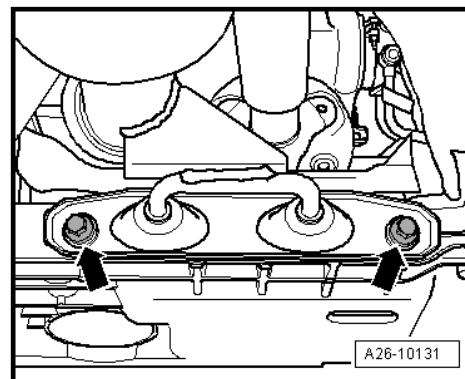


- Remove the bleed pipe from the bevel box -arrow-.

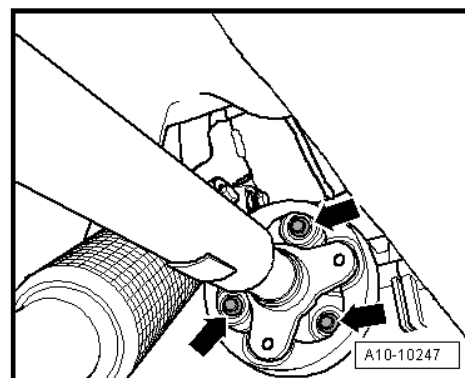


Continuation for All

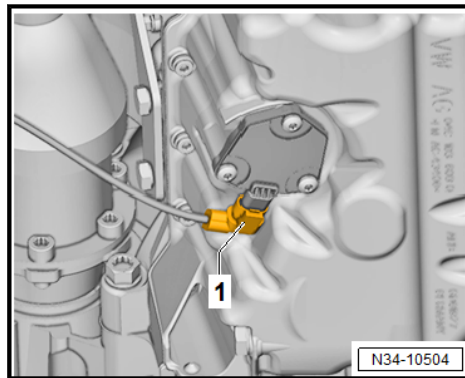
- Raise the vehicle.
- Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 50; Noise Insulation.
- Disconnect the exhaust system at the clamping sleeve and remove the exhaust system bracket from the subframe -arrows-.



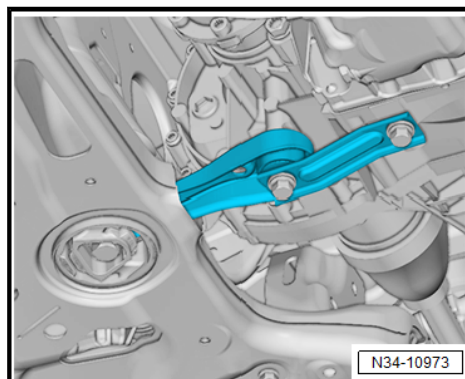
- Tie up the front exhaust pipe.
- Mark the position of the driveshaft with the flexible disc to the bevel box flange.



- Remove the driveshaft with the flexible disc from the bevel box flange -arrows-.
- Disconnect the connector -1- from the Oil Level Thermal Sensor -G266-.

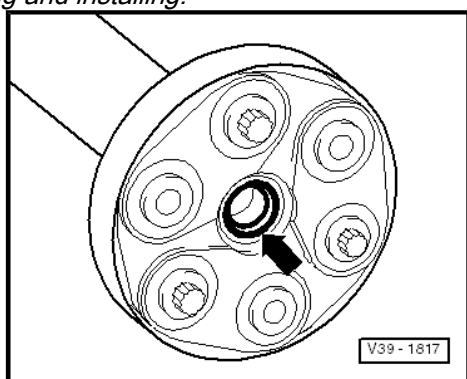


- Remove the pendulum support from the transmission.

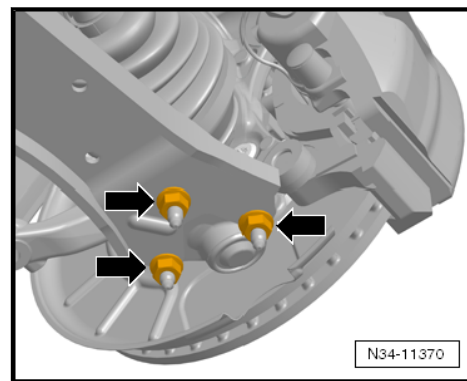


Note

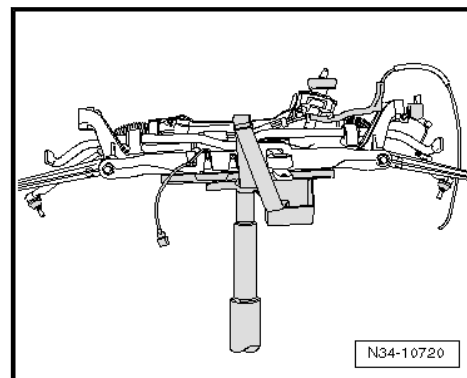
After loosening the pendulum support bolts, the engine/transmission assembly swings forward slightly (toward the front end). Make sure that the seal -arrow- in the driveshaft flange is not damaged when removing and installing.



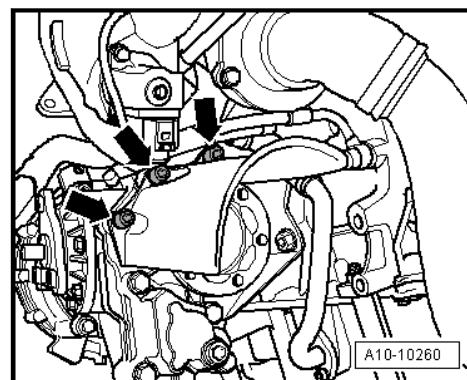
- Push the engine/transmission assembly slightly forward (toward the front end) and pull the driveshaft off the bevel box.
- Lift the driveshaft and secure it.
- Remove the left and right coupling rods from the stabilizer bar.
- Remove the nuts -arrows- for the ball joint on the control arm.



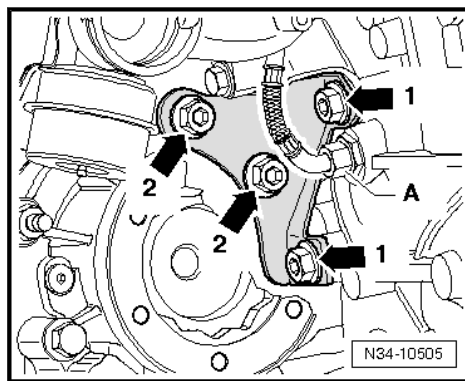
- Secure the subframe before removing. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Subframe, Stabilizer Bar and Control Arm; Subframe and Brackets, Securing.
- Remove subframe with pendulum support, stabilizer bar, brackets, steering gear and control arms. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Subframe, Stabilizer Bar and Control Arm; Subframe and Steering Gear, Removing and Installing.



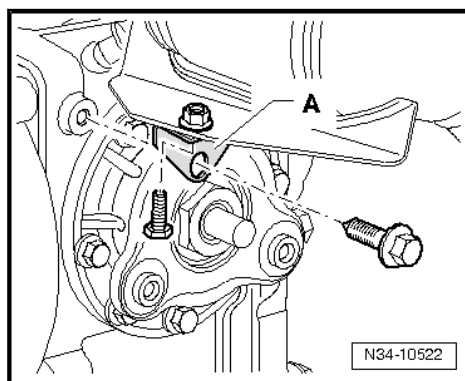
- Remove the right drive axle heat shield from the bevel box -arrows-.



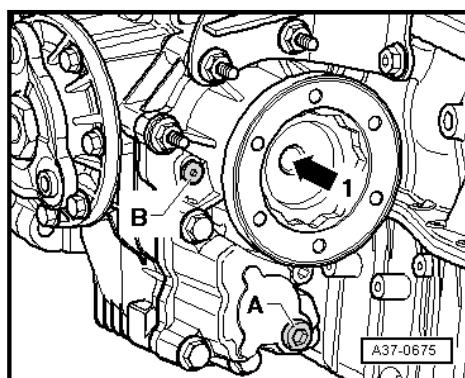
- Remove the right drive axle from the transmission flange shaft.
- Secure the drive axle. Do not damage the protective coating while doing so.
- Remove the turbocharger oil return line -A- from the engine. Refer to ⇒ Rep. Gr. 21; Charge Air System with Turbocharger; Overview - Turbocharger.



- Remove the transmission support bolts from the engine and bevel box -1 arrows- and -2 arrows-.
- Remove the transmission support.
- If equipped, remove the exhaust system support -A-. Refer to ⇒ Rep. Gr. 26; Exhaust System.



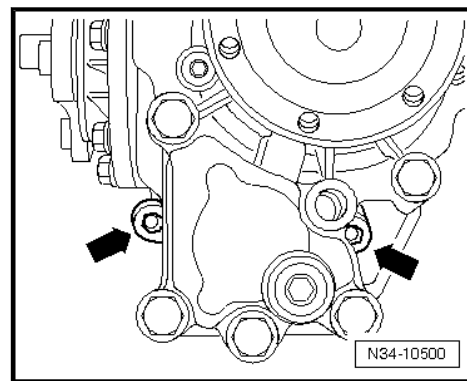
- Remove the right flange shaft bolt with a Socket for example Socket and Extended Bit -T10107 A- -arrow 1-.



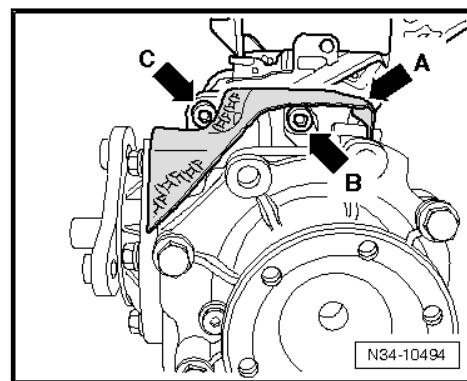
Note

The right flange shaft stays in the bevel box.

- Remove the lower bevel box bolts -arrows- from the manual transmission.



- Remove the upper bevel box bolts from the manual transmission:

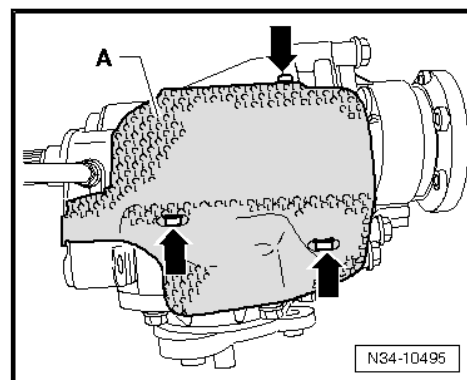


A heat shield -arrow A- is installed on the upper side of the bevel box on some vehicles.

The bolt -arrow B- is accessible from under the heat shield.

The bolt -arrow C- is accessible from above the heat shield.

- Carefully press bevel box off the manual transmission while protecting it against falling.
- Remove the bevel box.
- The heat shield -A- must be removed -arrows- if the bevel box is being replaced.



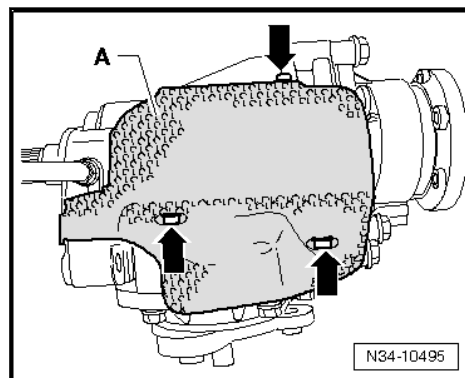
9.1.2 Bevel Box, Installing

Install in reverse order of removal while noting the following:

- With the manual transmission installed, lubricate differential splines with Grease for Clutch Plate Shaft Splines - G 000 100-.

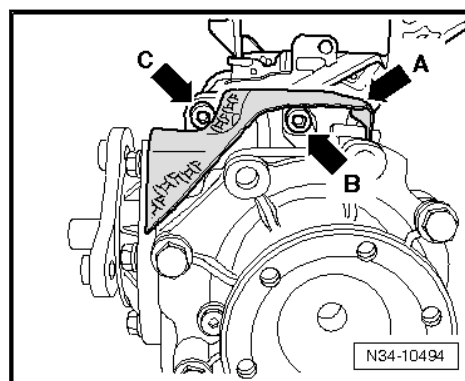


- If the bevel box is being replaced, then install the heat shield -A-.



- Tighten the bolts -arrows- to 5 Nm.
- Slide on bevel box completely on manual transmission, while doing this, join drive axle/bevel box splines centrally with the differential.
- Align the right flange shaft splines with the differential bevel gear. Turn the flange shaft if necessary.
- With proper tooth position and central guiding, bevel box slides up to stop against manual transmission.

A heat shield -arrow A- is installed on the upper side of the bevel box on some transmissions.



- The upper bevel box bolts to the manual transmission can be accessed as follows:

The bolt -arrow B- is accessible from under the heat shield.

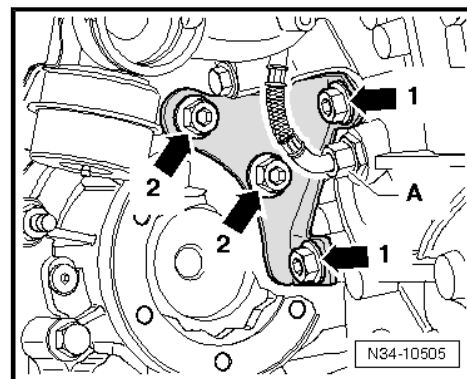
The bolt -arrow C- is accessible from above the heat shield.



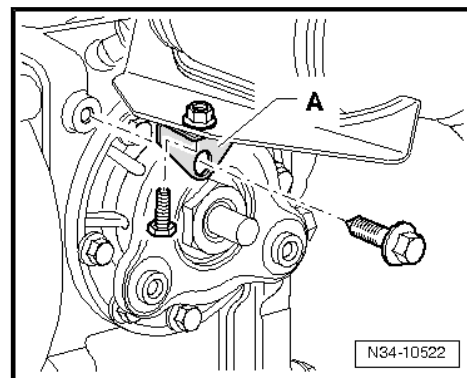
Note

Do not pull bevel box with mounting bolts against the transmission. Otherwise bevel box is canted and mounting eyelets can break off.

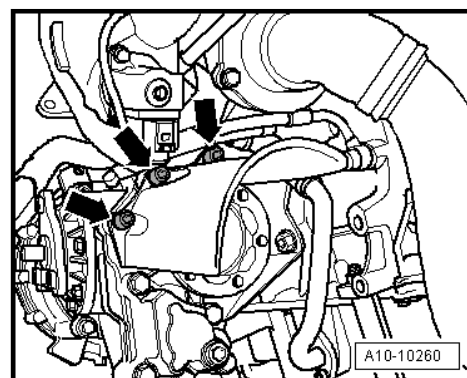
- Attach the bevel box transmission support to the engine. Follow the tightening sequence when installing the bolts -arrows 1- and -arrows 2-. Refer to [⇒ S9.1.3 specifications](#), [page 268](#).



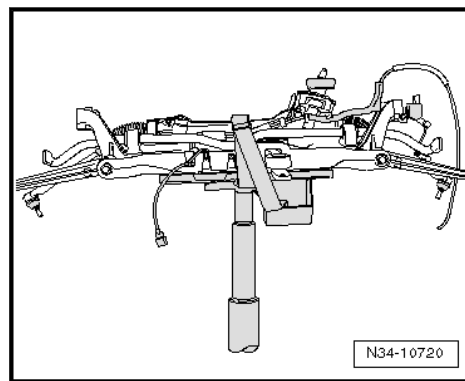
- Attach the turbocharger oil return line -A- to the engine. Refer to ⇒ Rep. Gr. 21; Charge Air System with Turbocharger; Overview - Turbocharger.
- If equipped, install the exhaust system support -A-. Refer to ⇒ Rep. Gr. 26; Exhaust System.



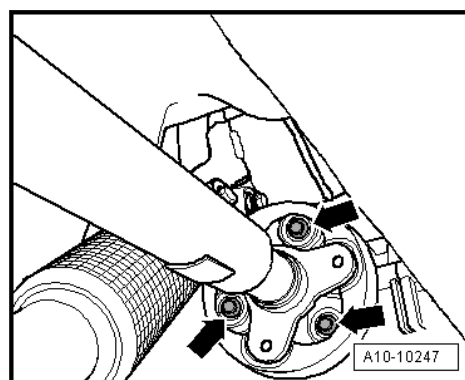
- Mount the right drive axle to the transmission. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axle, Removing and Installing.



- Attach the right drive axle heat shield to the bevel box -arrows- and tighten it to the tightening specification. Refer to ⇒ [S9.1.3 specifications](#), [page 268](#).
- Install subframe with pendulum support, stabilizer bar, brackets, steering gear and control arms. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Subframe, Stabilizer Bar and Control Arm; Subframe and Steering Gear, Removing and Installing.

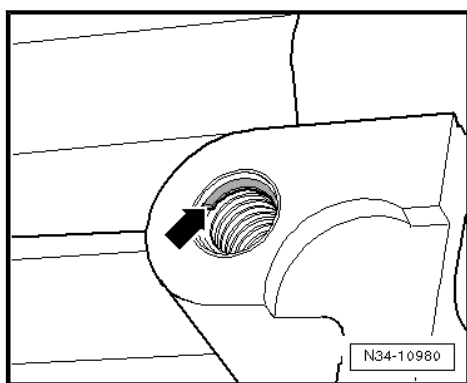


- Attach the driveshaft with the flexible disc to the bevel box flange -arrows-. Refer to ➔ Rep. Gr. 39; Driveshaft; Driveshaft, Removing and Installing.



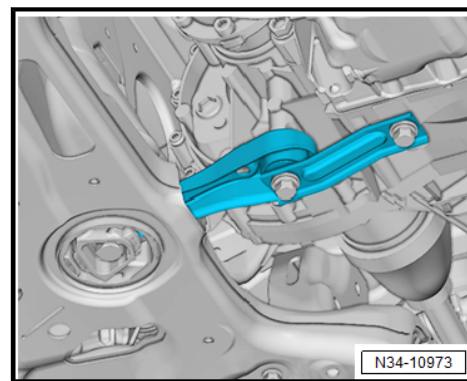
Note

- ♦ *The holes for the pendulum support in transmissions from 05/28/2007 have threaded inserts (for example, "Heli Coil").*
- ♦ *Identifying feature: there is a collar on the first thread -arrow-.*

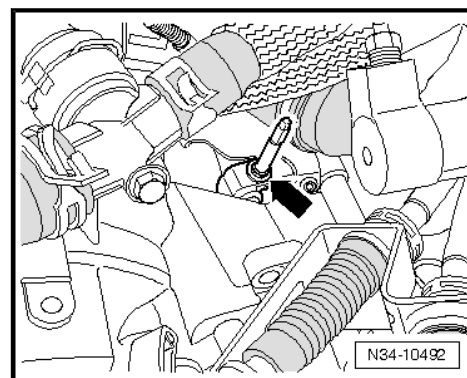


Pay attention to the corresponding bolts and tightening specifications. Refer to ➔ Suspension, Wheels, Steering; Rep. Gr. 40; Subframe, Stabilizer Bar and Control Arm; Overview - Subframe, Stabilizer Bar and Control Arm.

- Attach the pendulum support to the transmission. Refer to ➔ Suspension, Wheels, Steering; Rep. Gr. 40; Subframe, Stabilizer Bar and Control Arm; Overview - Subframe, Stabilizer Bar and Control Arms.

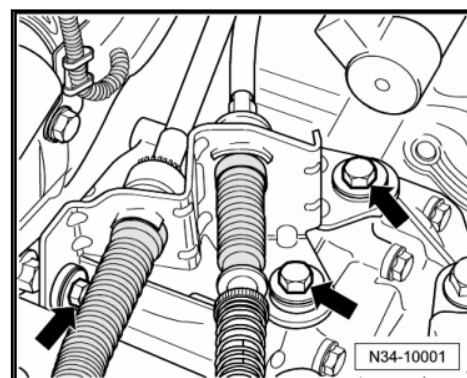


- Assemble the exhaust system and then attach the exhaust system bracket to the subframe. Refer to ➤ Rep. Gr. 26; Exhaust System.
- Check the gear oil in the bevel box. Refer to ➤ [O10 il in Bevel Box, Checking or Filling](#), page 294 .
- Check the transmission fluid level in the manual transmission. Refer to ➤ [F8 luid, Checking](#), page 252 .
- Install the noise insulation. Refer to ➤ Body Exterior; Rep. Gr. 50; Noise Insulation.
- If equipped, install the bleed pipe -arrow- in the bevel box and tighten to 10 Nm.



If the shift mechanism was removed from the transmission:

- Attach the cable bracket to the transmission and tighten the bolts or nuts -arrows- to the tightening specification ➤ [Item 6 \(page 103\)](#) and ➤ [Item 10 \(page 103\)](#) .



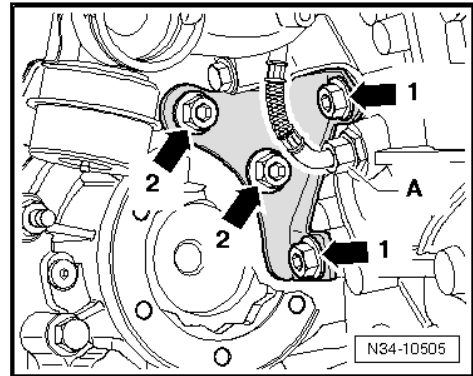
- Install and adjust the shift mechanism. Refer to ➤ [M1.9 echanism, Removing and Installing](#), page 113 .



- Install complete air filter housing. Refer to ➤ Rep. Gr. 23; Diesel Direct Fuel Injection System; Overview - Air Filter.
- Check the headlamp adjustment if the vehicle has a Left Front Level Control System Sensor -G78-. Refer to ➤ Electrical Equipment; Rep. Gr. 94; Exterior Lamps, Bulbs, Switches.

9.1.3 Tightening Specifications

Transmission Support, Installing, Vehicles with Turbo Diesel Engine



The following assembly sequence must be followed when installing the transmission support:

- Install the bolts -arrows 1- hand-tight.
- Tighten the bolts -arrows 2- to 40 Nm.
- Tighten the bolts -arrows 1- to 40 Nm.

Bevel box to manual transmission ◆ Replace the bolts.	-Item 17- ➤ Item 17 (page 314)
Right heat shield/drive axle to bevel box	20 Nm

9.2 Bevel Box, Removing and Installing, Vehicles with a Turbo Diesel Engine with a Particulate Filter, through Approximately 10/2009

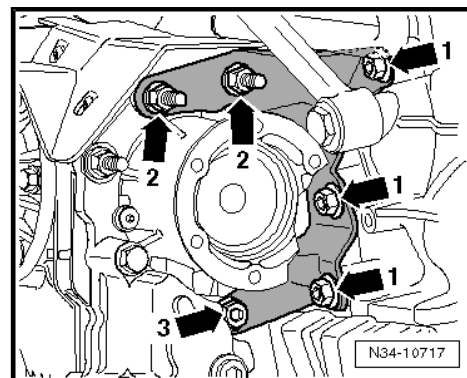


Note

Transmission mount from approximately 11/2009: Bevel Box, Removing and Installing. Refer to ➤ [B9.3 ox, Removing and Installing, Vehicles with a Turbo Diesel Engine with a Particulate Filter, through Approximately 11/2009](#), page 283.

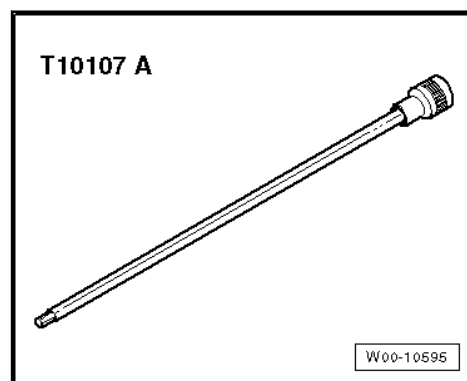


Identification: the transmission support is secured with the bolts -arrows 1 to 3- to the engine and the bevel box through approximately 10/2009.



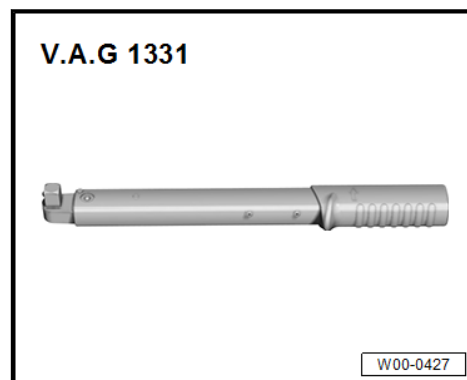
Special tools and workshop equipment required

- ◆ Socket and Extended Bit -T10107 A-

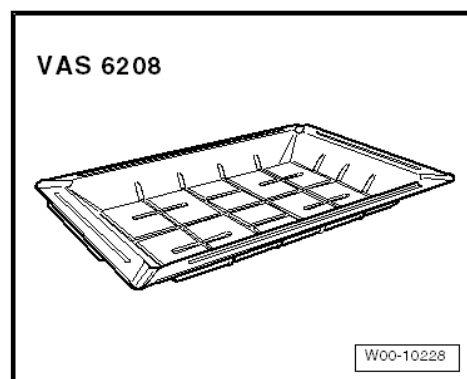


◆

- ◆ Torque Wrench 1331 5-50Nm -V.A.G 1331-



- ◆ Shop Crane - Drip Tray -VAS 6208-





- ◆ Determine the shift mechanism grease using the ⇒ Electronic Parts Catalog (ETKA).

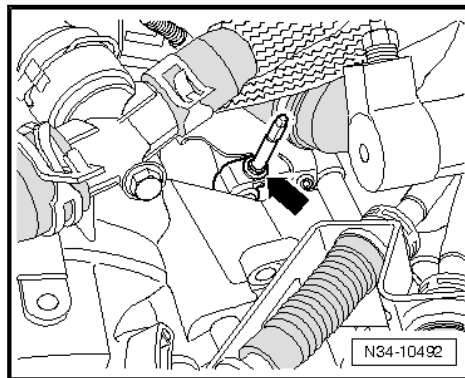


Note

Transmission mount from approximately 11/2009: Bevel Box, Removing and Installing. Refer to ⇒ [B9.3 ox, Removing and Installing, Vehicles with a Turbo Diesel Engine with a Particulate Filter, through Approximately 11/2009](#), page 283.

9.2.1 Bevel Box, Removing

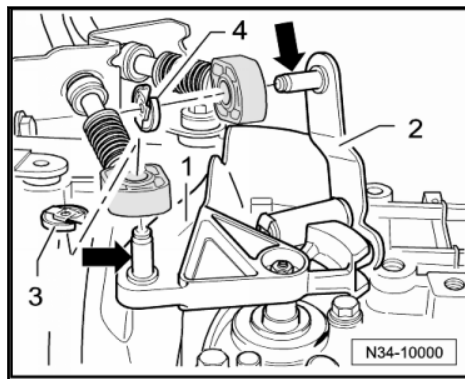
Check whether a bleed pipe -arrow- is installed on the bevel box.



- Remove the entire air filter housing if necessary. Refer to ⇒ Rep. Gr. 23; Diesel Direct Injection System; Overview - Air Filter.

To remove breather tube, shift mechanism must be removed from transmission:

- Remove the shift cable lock washer -3- from the transmission shift lever -1- and remove the cable from the pin -arrow-.

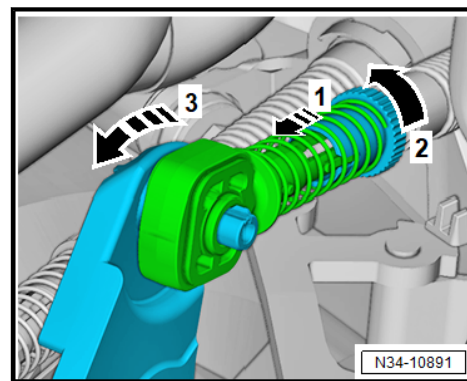


Metal Relay Lever

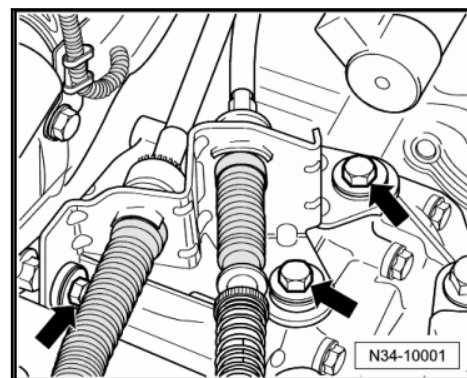
- Remove the selector cable lock washer -4- from the relay lever -2- and remove the cable from the pin -arrow-.

Plastic Relay Lever

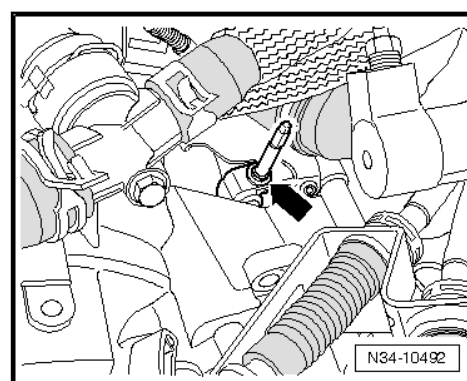
- Remove the cable retainer from the selector cable.



- To avoid damage to the selector cable, the cable retainer must be disconnected from the selector lever before removal.
- Pull the securing mechanism all the way forward in -direction of the arrow 1- and then unlock to the left in -direction of the arrow 2-.
- Press the relay lever forward (-direction of the arrow 3-).
- Remove the cable bracket from the transmission -arrows-, tie up to the side.

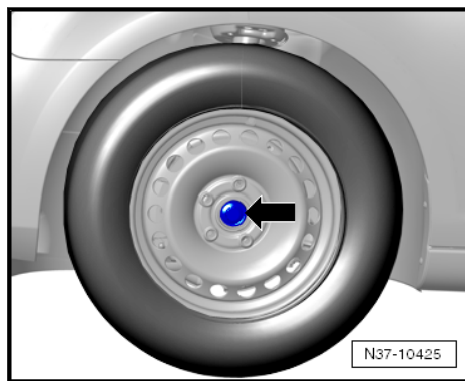


- Remove the bleed pipe from the bevel box -arrow-.

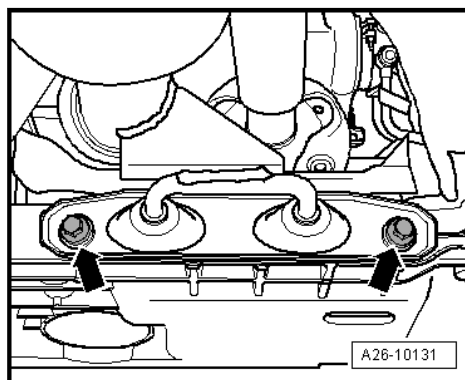


Continuation for All

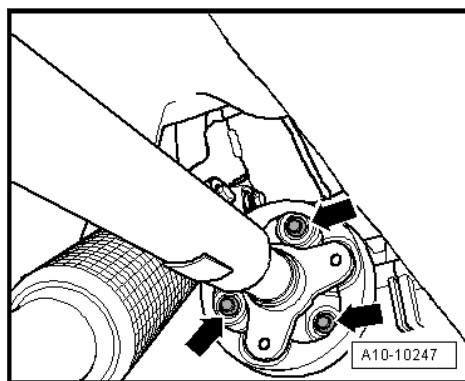
The right drive axle must be removed later in the procedure.



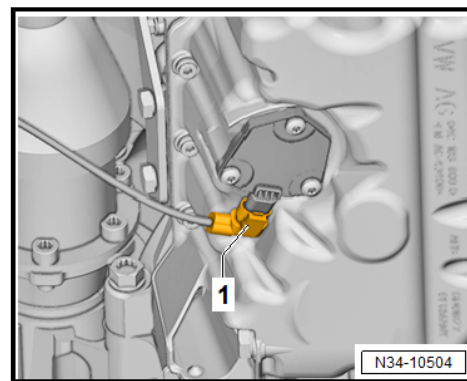
- With the vehicle still standing on its wheels, loosen the right front collar bolt -arrow- a maximum 90°, otherwise the wheel bearing will get damaged. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axles, Removing and Installing.
- Raise the vehicle.
- Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 50; Noise Insulation.
- Disconnect the exhaust system at the clamping sleeve and remove the exhaust system bracket from the subframe -arrows-.



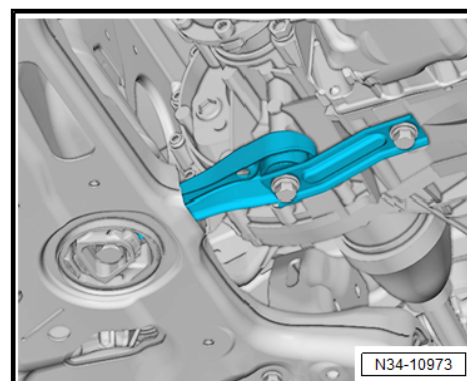
- Tie up the front exhaust pipe.
- Mark the position of the driveshaft with the flexible disc to the bevel box flange.



- Remove the driveshaft with the flexible disc from the bevel box flange -arrows-.
- Disconnect the connector -1- from the Oil Level Thermal Sensor -G266-.

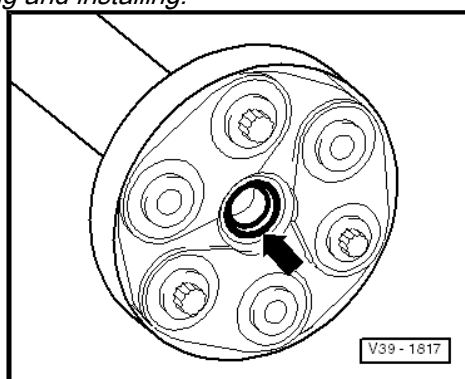


- Remove the pendulum support from the transmission.

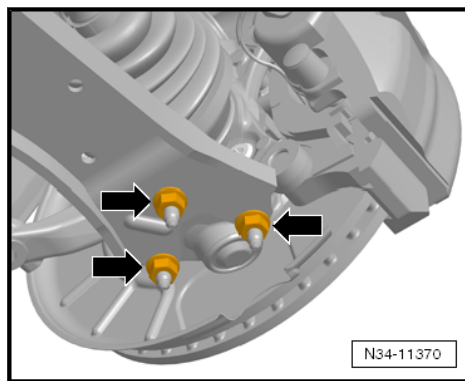


Note

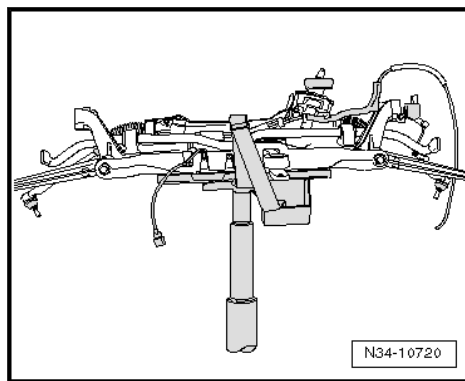
After loosening the pendulum support bolts, the engine/transmission assembly swings forward slightly (toward the front end). Make sure that the seal -arrow- in the driveshaft flange is not damaged when removing and installing.



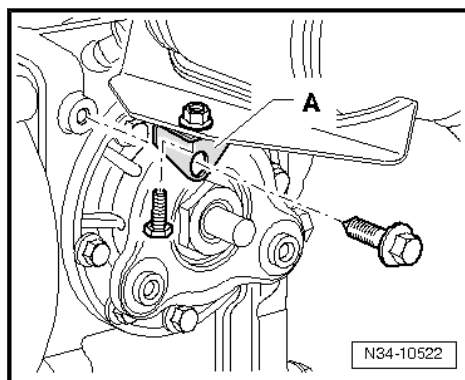
- Push the engine/transmission assembly slightly forward (toward the front end) and pull the driveshaft off the bevel box.
- Lift the driveshaft and secure it.
- Remove the left and right coupling rods from the stabilizer bar.
- Remove the nuts -arrows- for the ball joint on the control arm.



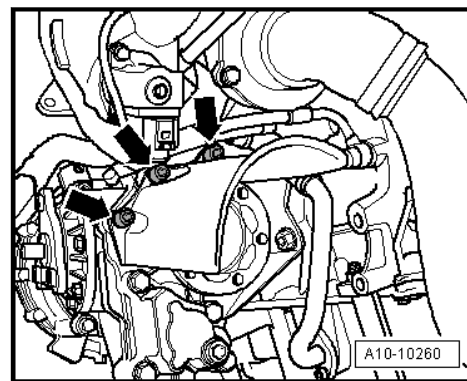
- Secure the subframe before removing. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Subframe, Stabilizer Bar and Control Arm; Subframe and Brackets, Securing.
- Remove subframe with pendulum support, stabilizer bar, brackets, steering gear and control arms. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Subframe, Stabilizer Bar and Control Arm; Subframe and Steering Gear, Removing and Installing.



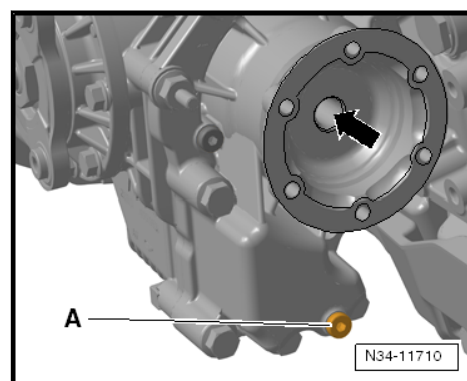
- If equipped, remove the exhaust system support -A-. Refer to ⇒ Rep. Gr. 26; Exhaust System.



- Remove the right drive axle heat shield from the bevel box -arrows-.



- Remove the right drive axle. Refer to ➤ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axles, Removing and Installing.
- Place a Drip Tray such as the Shop Crane - Drip Tray -VAS 6208- under the transmission.
- Drain the fluid from the bevel box via the plug -A-.

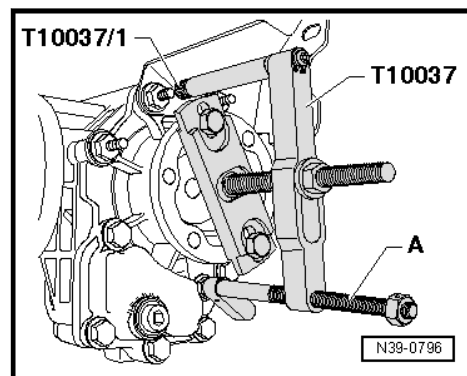


- Remove the right flange shaft bolt -arrow- with the Socket And Extended Bit -T10107 A- and install two bolts in the flange and counter-hold the flange shaft with the pry bar.
- Then install and tighten the new plug -A-.

M10 X 1 bolt = 15 Nm

M20 X 1.5 bolt = 60 Nm

- Attach the Puller - Flanged Shaft -T10037- to the right flange shaft.

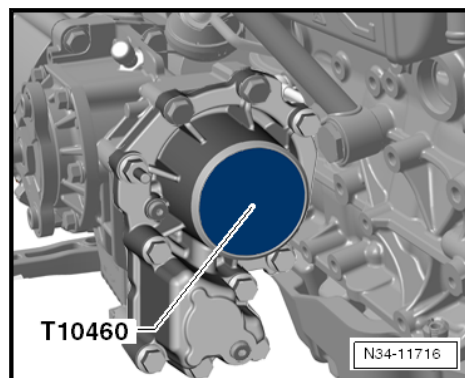




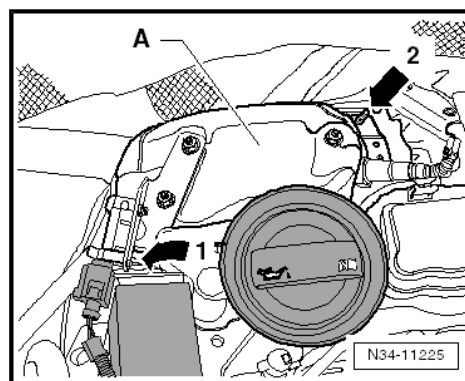
Note

To remove the right flange shaft, use the Puller - Flanged Shaft -T10037- to avoid damaging the flange shaft bearing.

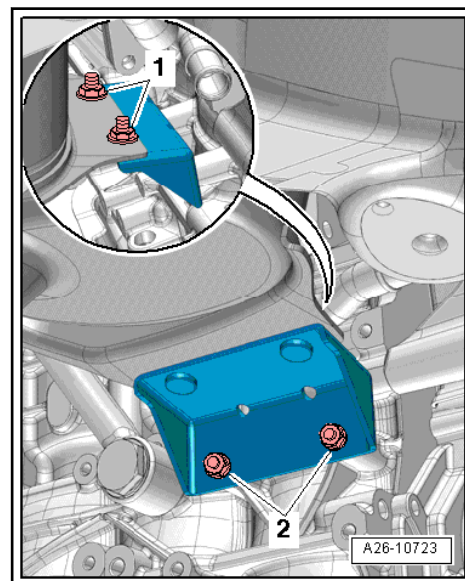
- Place a spacer (for example, Press Piece - Bushing -VW 434-) between the transmission support and the Stub Shaft Counter-Hold Tool - Knurled Nut -T10371/1-.
- Align the Puller - Flanged Shaft parallel to the flange using the Spindle -A-.
- Pull out the right flange shaft.
- Seal the bevel box with a Closure Cap.



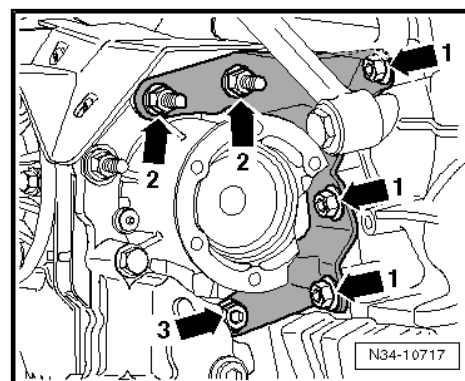
- Remove the engine cover.
- Remove the upper particulate filter -A- from the engine -arrow 1- and from under the turbocharger -arrow 2-. Refer to ⇒ Rep. Gr. 26; Exhaust System.



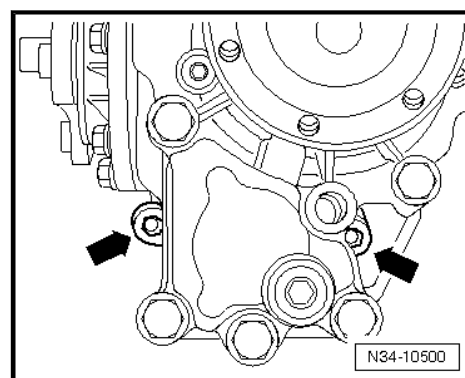
- Loosen the nuts -1- and remove the nuts -2- to remove the particulate filter bracket from the engine.



- Then tie up the particulate filter on the plenum chamber bulkhead.
- Remove the turbocharger support. Refer to ➤ Rep. Gr. 21; Charge Air System with Turbocharger; Overview - Turbocharger.
- Remove the EGR cooler (do not remove the coolant hoses). Refer to ➤ Rep. Gr. 26; EGR System.
- Remove the transmission support bolts from the engine and bevel box -1 arrows-, -2 arrows- and -3 arrows-.

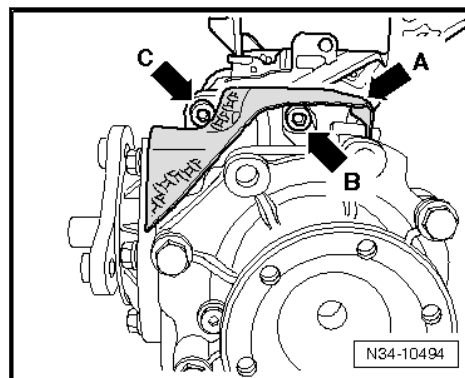


- Remove the transmission support.
- Remove the lower bevel box bolts -arrows- from the manual transmission.





- Remove the upper bevel box bolts from the manual transmission:

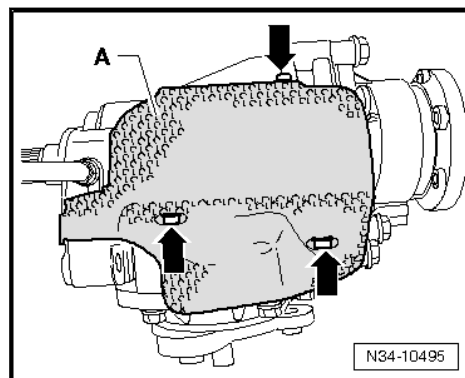


A heat shield -arrow A- is installed on the upper side of the bevel box on some vehicles.

The bolt -arrow B- is accessible from under the heat shield.

The bolt -arrow C- is accessed above the heat shield.

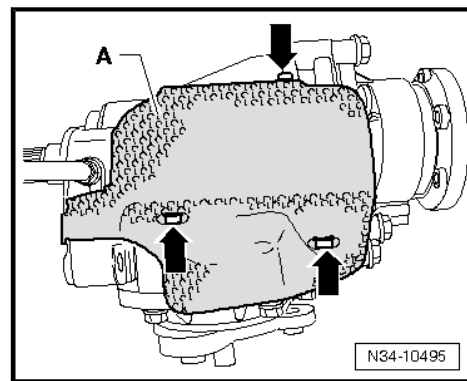
- Carefully press bevel box off the manual transmission while protecting it against falling.
- Remove the bevel box.
- If replacing the bevel box, check whether the heat shield -A- must be removed.



9.2.2 Bevel Box, Installing

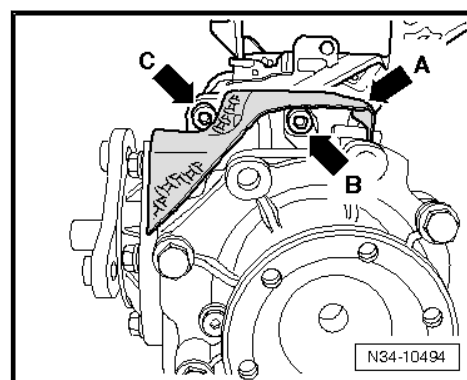
Install in reverse order of removal while noting the following:

- With the manual transmission installed, lubricate differential splines with Grease for Clutch Plate Shaft Splines - G 000 100-.
- If the bevel box is being replaced, then install the heat shield -A-.



- Tighten the bolts -arrows- to 5 Nm.
- Slide on bevel box completely on manual transmission, while doing this, join drive axle/bevel box splines centrally with the differential.
- With proper tooth position and central guiding, bevel box slides up to stop against manual transmission.

A heat shield -arrow A- is installed on the upper side of the bevel box on some transmissions.



- The upper bevel box bolts to the manual transmission can be accessed as follows:

The bolt -arrow B- is accessible from under the heat shield.

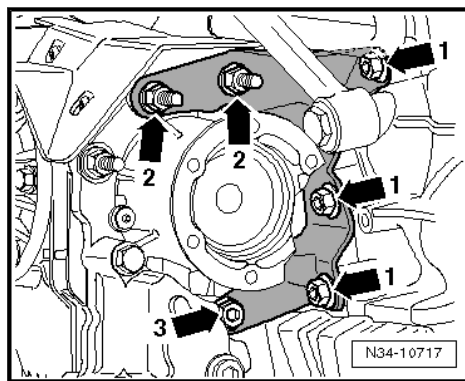
The bolt -arrow C- is accessible from above the heat shield.



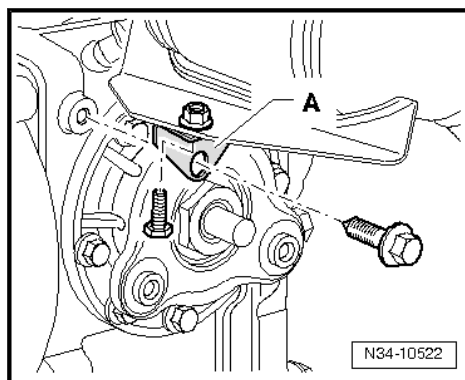
Note

Do not pull bevel box with mounting bolts against the transmission. Otherwise bevel box is canted and mounting eyelets can break off.

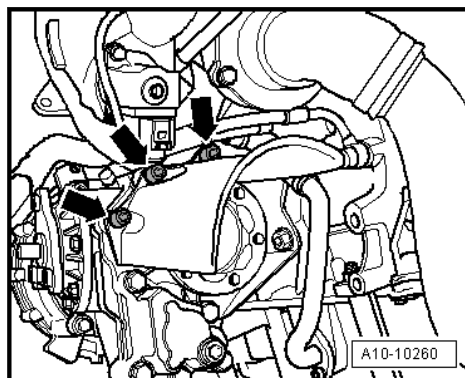
- Attach the bevel box transmission support to the engine and bevel box. Pay attention to the tightening sequence for the bolts -1 arrows-, -2 arrows- and -3 arrows-. Refer to ➤ [S9.2.3 specifications", page 283](#) .



- Install the turbocharger support. Refer to ⇒ Rep. Gr. 21; Charge Air System with Turbocharger; Overview - Turbocharger.
- Attach the particulate filter with the particulate filter bracket to the engine. Refer to ⇒ Rep. Gr. 26; Exhaust System.
- Install the EGR cooler (do not open the coolant system). Refer to ⇒ Rep. Gr. 26; EGR System.
- If equipped, install the exhaust system support -A-. Refer to ⇒ Rep. Gr. 26; Exhaust System.

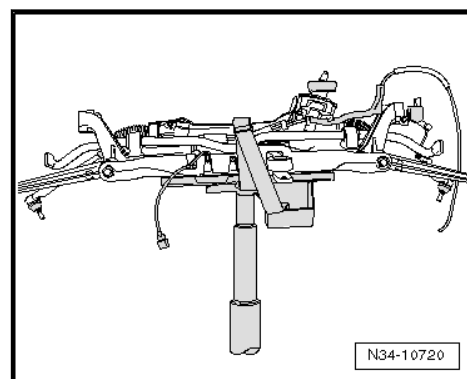


- Carefully drive in the left flange shaft. While doing so turn the flange shaft so that the bearing does not get damaged.
- Fasten the flange shaft with a countersunk bolt and tighten it to the tightening specification ⇒ [Item 13 \(page 508\)](#).
- Install the right drive axle. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axle, Removing and Installing.
- Attach the right drive axle heat shield to the bevel box -arrows- and tighten it to the tightening specification. Refer to ⇒ [S9.1.3 pecifications", page 268](#).

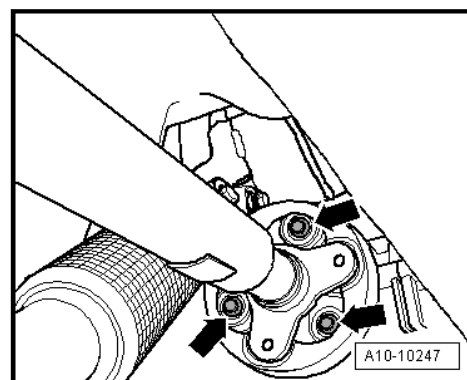




- Install subframe with pendulum support, stabilizer bar, brackets, steering gear and control arms. Refer to ➤ Suspension, Wheels, Steering; Rep. Gr. 40; Subframe, Stabilizer Bar and Control Arm; Subframe and Steering Gear, Removing and Installing.

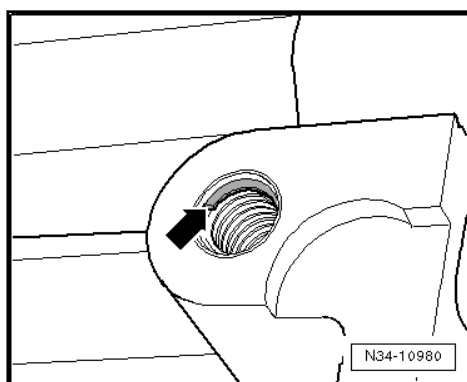


- Attach the driveshaft with the flexible disc to the bevel box flange -arrows-. Refer to ➤ Rep. Gr. 39; Driveshaft; Driveshaft, Removing and Installing.



Note

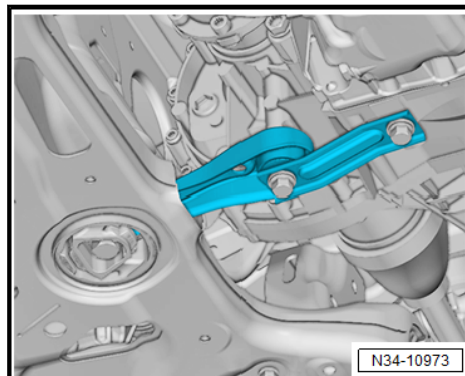
- ◆ The holes for the pendulum support in transmissions from 05/28/2007 have threaded inserts (for example, "Heli Coil").
- ◆ Identifying feature: there is a collar on the first thread -arrow-.



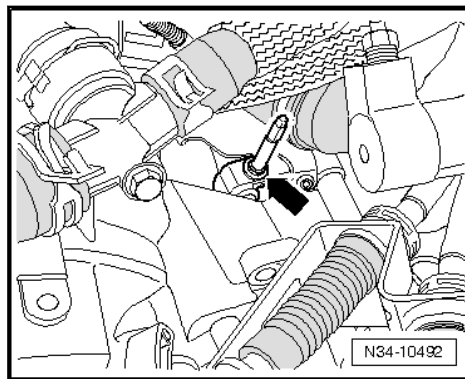
Pay attention to the corresponding bolts and tightening specifications. Refer to ➤ Suspension, Wheels, Steering; Rep. Gr. 40; Subframe, Stabilizer Bar and Control Arm; Overview - Subframe, Stabilizer Bar and Control Arm.



- Attach the pendulum support to the transmission. Refer to ➤ Suspension, Wheels, Steering; Rep. Gr. 40; Subframe, Stabilizer Bar and Control Arm; Overview - Subframe, Stabilizer Bar and Control Arms.

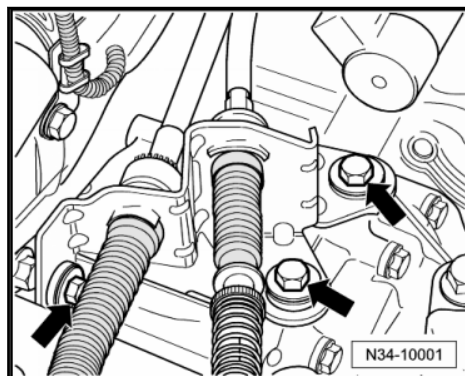


- Assemble the exhaust system and then attach the exhaust system bracket to the subframe. Refer to ➤ Rep. Gr. 26; Exhaust System.
- Check the gear oil in the bevel box. Refer to ➤ [O10 il in Bevel Box, Checking or Filling](#), page 294 .
- Check the transmission fluid level in the manual transmission. Refer to ➤ [F8 luid, Checking](#), page 252 .
- Install the noise insulation. Refer to ➤ Body Exterior; Rep. Gr. 50; Noise Insulation.
- If equipped, install the bleed pipe -arrow- in the bevel box and tighten to 10 Nm.



If the shift mechanism was removed from the transmission:

- Attach the cable bracket to the transmission and tighten the bolts or nuts -arrows- to the tightening specification ➤ [Item 6 \(page 103\)](#) and ➤ [Item 10 \(page 103\)](#) .





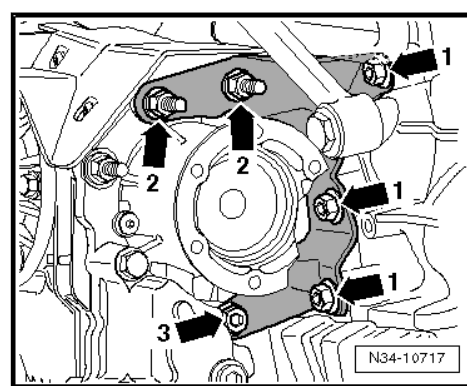
- Install and adjust the shift mechanism. Refer to ➤ [M1.9 echanism, Removing and Installing”, page 113](#) .
- Install complete air filter housing. Refer to ➤ Rep. Gr. 23; Diesel Direct Fuel Injection System; Overview - Air Filter.
- Check the headlamp adjustment if the vehicle has a Left Front Level Control System Sensor -G78-. Refer to ➤ Electrical Equipment; Rep. Gr. 94; Exterior Lamps, Bulbs, Switches.

9.2.3 Tightening Specifications

Bevel box to manual -Item 17- ➤ [Item 17 \(page 314\)](#) transmission

- ◆ Replace the bolts.

Install the transmission mount.



Allocation of bolts

Item	Bolt	Quantity
1	M10 x 21	3
2	M10 x 45	2
3	M10 x 62	1

The following assembly sequence must be followed when installing the transmission support:

- Hand-tighten all bolts.
- Tighten the bolts -arrows 2- and -arrow 3- to 40 Nm.
- Tighten the bolts -arrows 1- to 40 Nm.

9.3 Bevel Box, Removing and Installing, Vehicles with a Turbo Diesel Engine with a Particulate Filter, through Approximately 11/2009

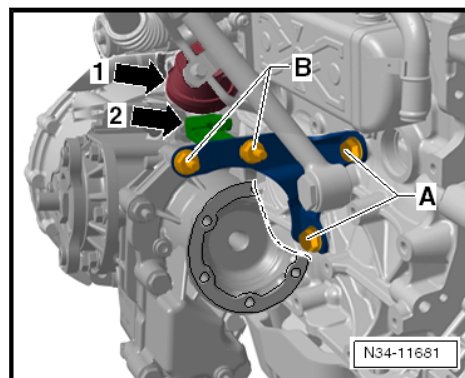


Note

Transmission mount through approximately 10/2009; Bevel box, removing and installing. Refer to ➤ [B9.2 ox, Removing and Installing, Vehicles with a Turbo Diesel Engine with a Particulate Filter, through Approximately 10/2009”, page 268](#) .



Identifying feature

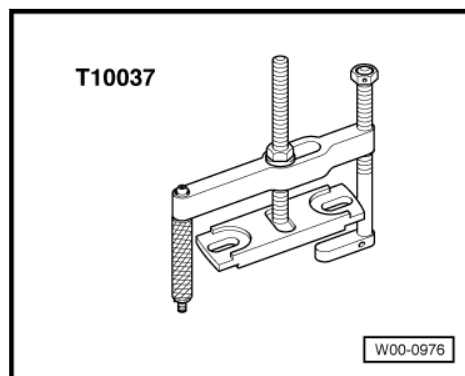


After 11/2009, a brace -arrow 2- is installed under the vacuum diaphragm -arrow 1- at the top of the transmission support (gradual introduction).

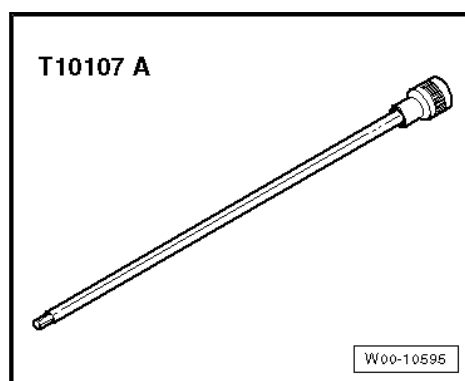
The transmission support is connected to the engine and bevel box with the bolts -A- and -B-.

Special tools and workshop equipment required

- ◆ Puller - Flanged Shaft -T10037-

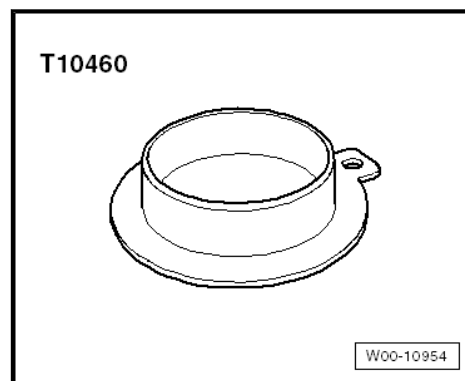


- ◆ Socket and Extended Bit -T10107 A-

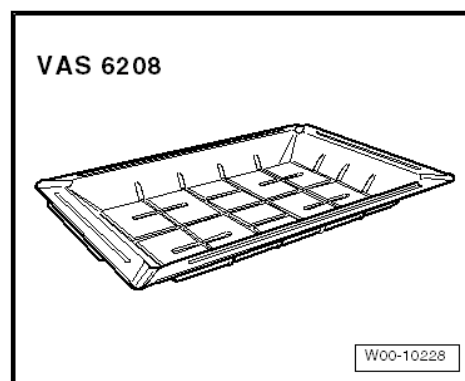




◆ Cover Cap -T10460-

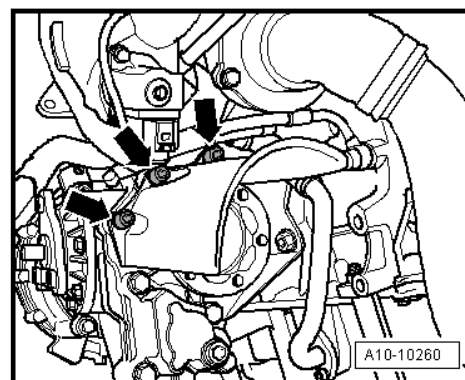


◆ Shop Crane - Drip Tray -VAS 6208-

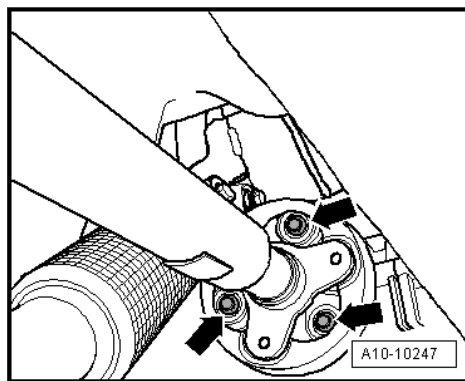


9.3.1 Bevel Box, Removing

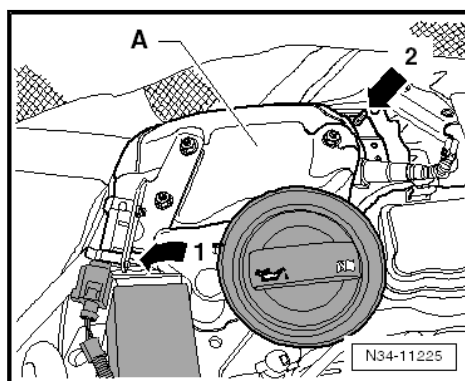
- Remove the noise insulation under the engine/transmission noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 50; Noise Insulation.
- Remove the right drive axle heat shield from the bevel box -arrows-.



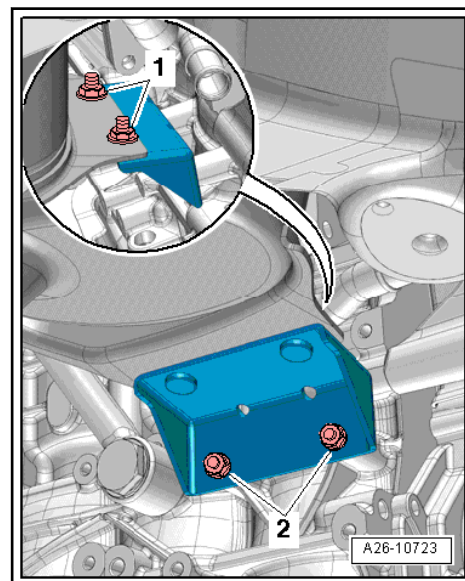
- Remove the right drive axle. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axles, Removing and Installing.
- Mark the position of the driveshaft with the flexible disc to the bevel box flange with paint.



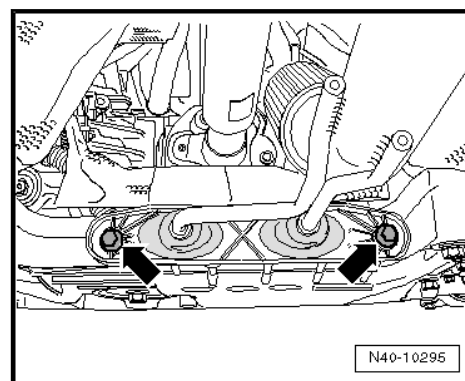
- Remove the driveshaft from the bevel box -arrows-. Refer to ⇒ Rep. Gr. 39; Driveshaft; Driveshaft, Removing and Installing.
- Slide the front driveshaft tube all the way back.
- Place a cloth on the subframe to prevent damaging the paint on the driveshaft when it will be placed on it.
- Position the driveshaft on the subframe.
- Remove the engine cover.
- Remove the upper particulate filter -A- from the engine -arrow 1- and from under the turbocharger -arrow 2-. Refer to ⇒ Rep. Gr. 26; Exhaust System.



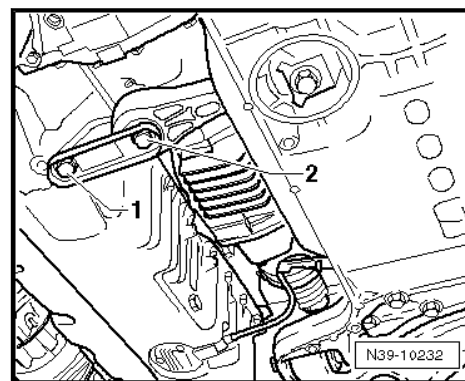
- Loosen the nuts -1- and remove the nuts -2- to remove the particulate filter bracket from the engine.



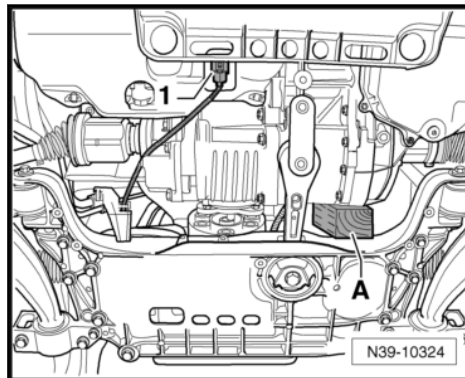
- Then tie up the particulate filter on the plenum chamber bulkhead.
- Remove the exhaust system bracket from the subframe -arrows-.



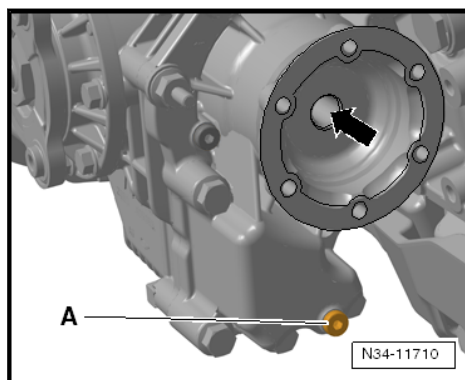
- Remove the pendulum support from the transmission, bolt -1- and bolt -2-.



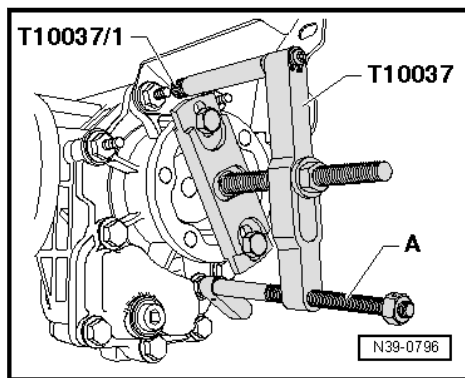
- Push the engine/transmission assembly forward by hand and secure the in the position using a suitable piece of wood -A-.



- Place a Drip Tray such as the Shop Crane - Drip Tray -VAS 6208- under the transmission.
- Drain the fluid from the bevel box via the plug -A-.



- Install the bolt and tighten it to 15 Nm.
- Remove the right flange shaft bolt -arrow- with the Socket And Extended Bit -T10107 A- and install two bolts in the flange and counter-hold the flange shaft with the pry bar.
- Attach the Puller - Flanged Shaft -T10037- to the right flange shaft.



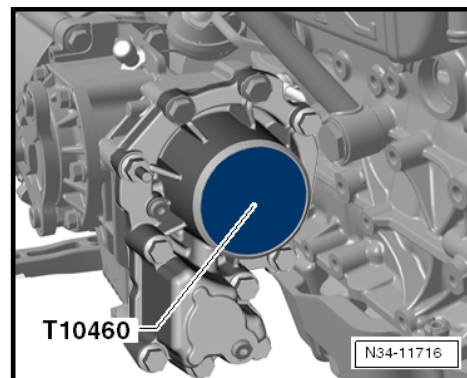
Note

To remove the right flange shaft, use the Puller - Flanged Shaft -T10037- to avoid damaging the flange shaft bearing.

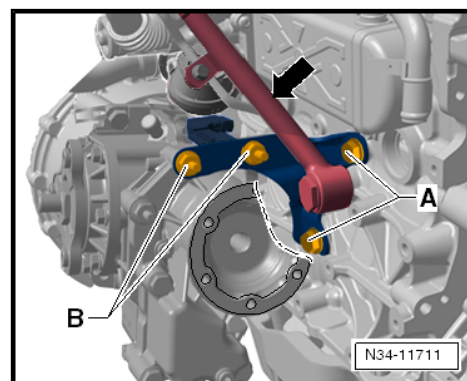
- If necessary, place a spacer (for example, Press Piece - Bushing -VW 434-) between the transmission support and the Stub Shaft Counter-Hold Tool -T10037/1-.



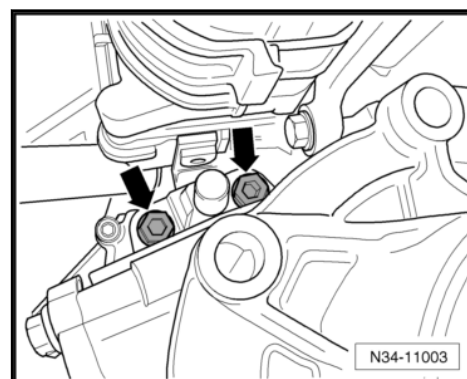
- Align the Puller - Flanged Shaft parallel to the flange using the Spindle -A-.
- Pull out the right flange shaft.
- Seal the bevel box with a Cover Cap -T10460-.



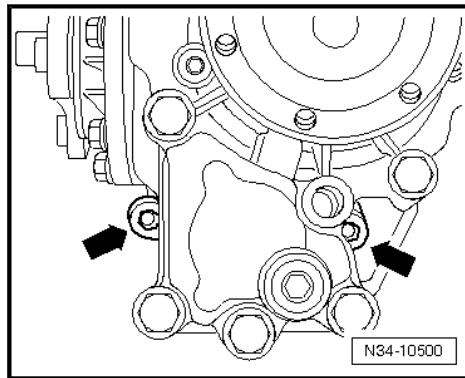
- Remove the turbocharger support. Refer to ➤ Rep. Gr. 21; Charge Air System with Turbocharger; Overview - Turbocharger.



- Remove the transmission support bolts -A- and -B- from the engine and the bevel box.
- Remove the transmission support.
- Remove the upper bevel box bolts -arrows- on the manual transmission.



- Remove the lower bevel box bolts -arrows- on the manual transmission.



- Carefully push the bevel box off the manual transmission and remove it.

9.3.2 Bevel Box, Installing

Install in reverse order of removal while noting the following:

Install the bevel box with the flange shaft removed.

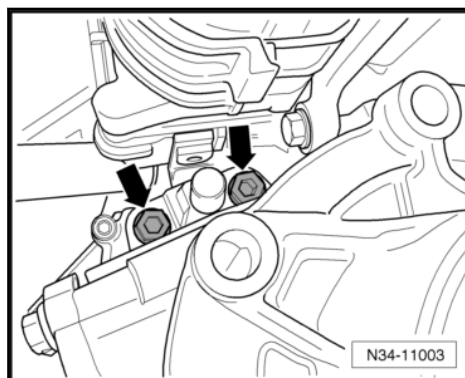
- Coat the splines on the manual transmission differential with Grease For Clutch Plate Shaft Splines -G 000 100-.
- Slide on bevel box completely on manual transmission, while doing this, join drive axle/bevel box splines centrally with the differential.
- With proper tooth position and central guiding, bevel box slides up to stop against manual transmission.



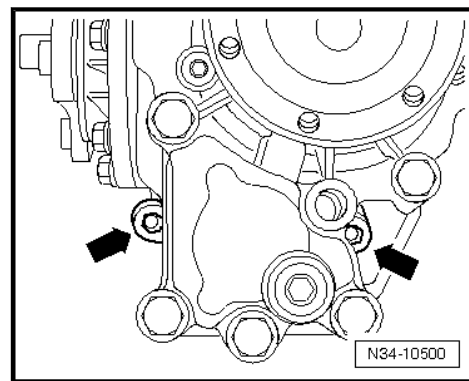
Note

Do not pull bevel box with mounting bolts against the transmission. Otherwise bevel box is canted and mounting eyelets can break off.

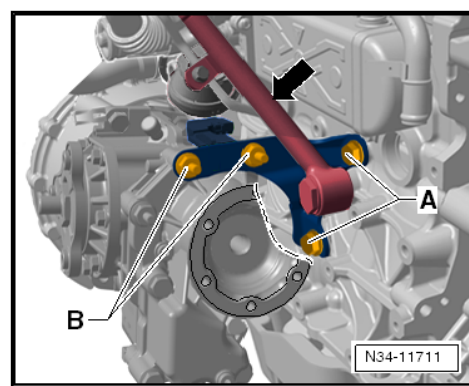
- Install the upper bolts (-arrows-) that attach the bevel box to the manual transmission and tighten them to 40 Nm + 90°.



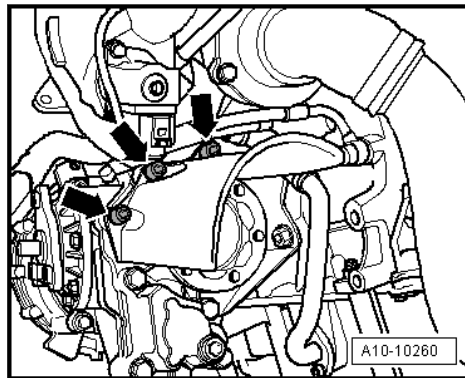
- Install the lower bolts -arrows- that attach the bevel box to the manual transmission and tighten them to 40 Nm + 90°.



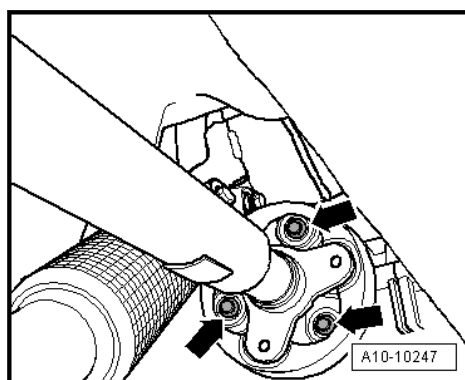
- Attach the bevel box transmission support to the engine and bevel box. At the same time, pay attention to the tightening sequence for the bolts -A- and -B- ➤ [S9.3.3 specifications](#), [page 293](#) .



- Install the turbocharger support. Refer to ➤ Rep. Gr. 21; Charge Air System with Turbocharger; Overview - Turbocharger.
- Attach the particulate filter with the particulate filter bracket to the engine. Refer to ➤ Rep. Gr. 26; Exhaust System.
- Carefully drive in the left flange shaft. While doing so turn the flange shaft so that the bearing does not get damaged.
- Fasten the flange shaft with a countersunk bolt and tighten it to the tightening specification ➤ [Item 13 \(page 508\)](#) .
- Install the right drive axle. Refer to ➤ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axle, Removing and Installing.
- Fill the bevel box with gear oil. Refer to ➤ [O10 oil in Bevel Box, Checking or Filling](#), [page 294](#) .
- Attach the right drive axle heat shield to the bevel box -arrows- and tighten it to the tightening specification. Refer to ➤ [S9.1.3 specifications](#), [page 268](#) .

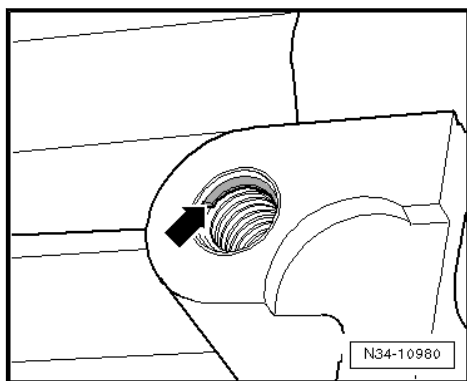


- Attach the driveshaft with the flexible disc to the bevel box flange -arrows-. Refer to ➔ Rep. Gr. 39; Driveshaft; Driveshaft, Removing and Installing.



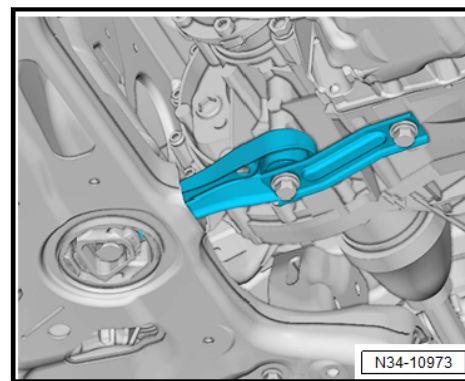
Note

- ♦ *The holes for the pendulum support in transmissions from 05/28/2007 have threaded inserts (for example, "Heli Coil").*
- ♦ *Identifying feature: there is a collar on the first thread -arrow-.*



Pay attention to the corresponding bolts and tightening specifications. Refer to ➔ Suspension, Wheels, Steering; Rep. Gr. 40; Subframe, Stabilizer Bar and Control Arm; Overview - Subframe, Stabilizer Bar and Control Arm.

- Attach the pendulum support to the transmission. Refer to ➔ Suspension, Wheels, Steering; Rep. Gr. 40; Subframe, Stabilizer Bar and Control Arm; Overview - Subframe, Stabilizer Bar and Control Arms.

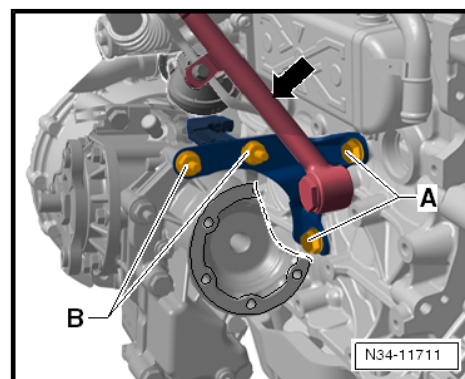


- Assemble the exhaust system and then attach the exhaust system bracket to the subframe. Refer to ➤ Rep. Gr. 26; Exhaust System.
- Install the noise insulation. Refer to ➤ Body Exterior; Rep. Gr. 50; Noise Insulation.

9.3.3 Tightening Specifications

Bevel box to manual transmission
♦ Replace the bolts.

Allocation of the transmission support bolts to the engine and bevel box



Item	Bolt	Quantity
A	M10 x 21	2
B	M10 x 45	2

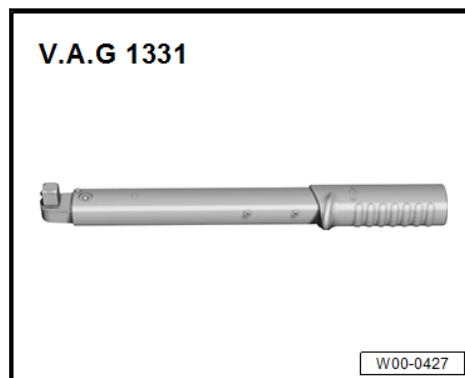
- Hand-tighten all bolts.
- Tighten the bolts -B- to 40 Nm.
- Tighten the bolts -A- to 40 Nm.



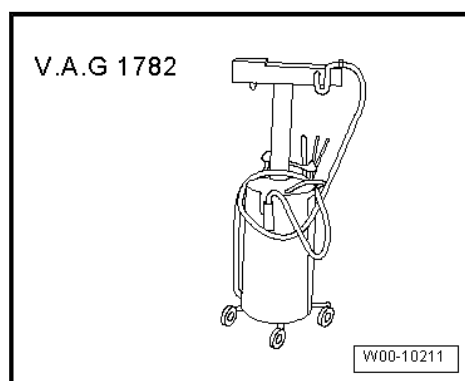
10 Gear Oil in Bevel Box, Checking or Filling

Special tools and workshop equipment required

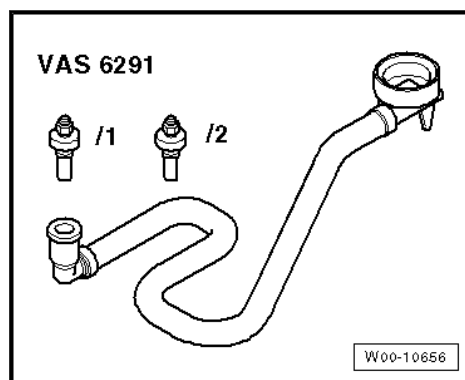
- ◆ Torque Wrench 1331 5-50Nm -V.A.G 1331-



- ◆ Used Oil Collection and Extraction Unit -SMN372500-



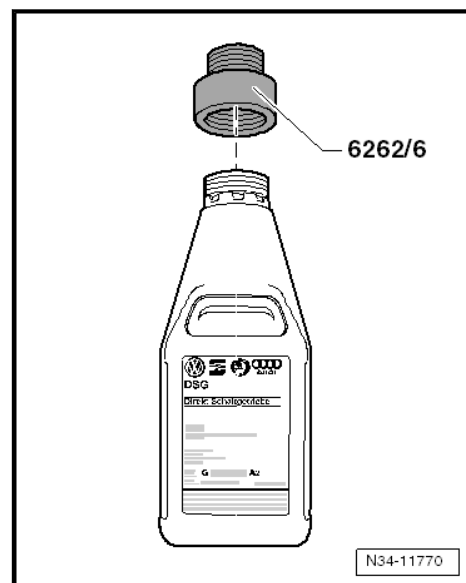
- ◆ Also for filling:



- ◆ Charging Device for AWD Clutch Coupling 2 -VAS 6291A-
- ◆ Charging Device For AWD Clutch Coupling 2 - Adapter 3 -VAS 6291/3-



- ◆ It is necessary to use the Oil Filler - Adapter 6 -VAS 6262/6- on some oil containers.



Bevel box is attached to the side of manual transmission and has a separate self-contained oil system.

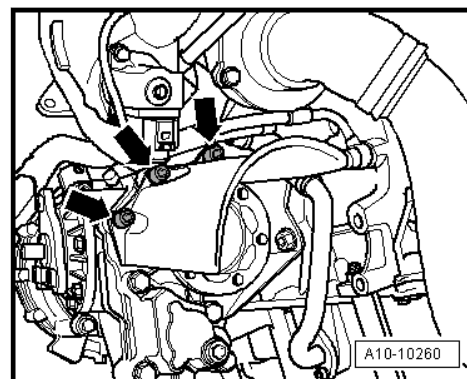
Bevel box gear oil. Refer to the ⇒ Electronic Parts Catalog (ETKA).

Check the transmission fluid level in the manual transmission. Refer to ⇒ [F8 fluid, Checking](#), page 252 .

10.1 Gear Oil Level in Bevel Box, Checking

Requirements

- Bevel box must be in the installation position.
- Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 50; Noise Insulation.
- Remove the right drive axle heat shield from the bevel box -arrows-.



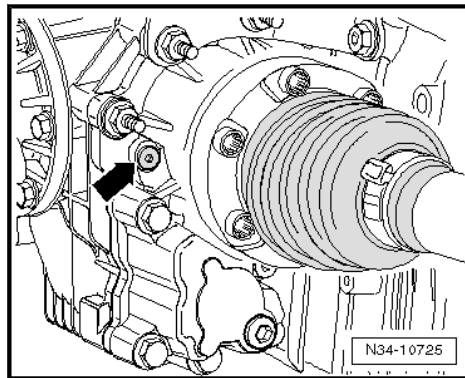
- Place the Used Oil Collection and Extraction Unit - SMN372500- under the bevel box.



Note

Cover the area under the transmission fluid fill plug -arrow- with a cloth.

- Remove the transmission fluid fill plug -arrow- in the bevel box.



The oil filler plug -arrow- must be replaced.

Oil level is correct if bevel box is filled with oil as far as bottom edge of oil fill hole.

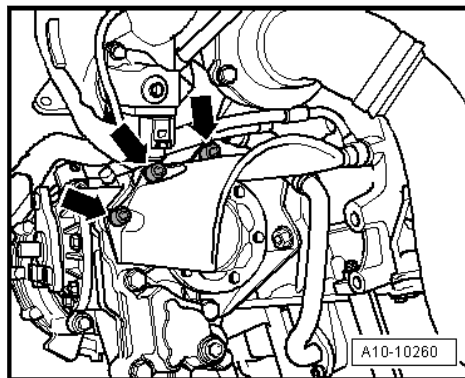
If oil comes in contact with bevel box, remove the bevel box carefully.

- Add gear oil, if necessary. Refer to [⇒ O10.2 il in Bevel Box, Filling](#), page 296 .
- Install the new transmission fluid fill plug -arrow-.
- Tighten the bolt to the tightening specification. Refer to [⇒ S10.2.1 pecification](#), page 299 .

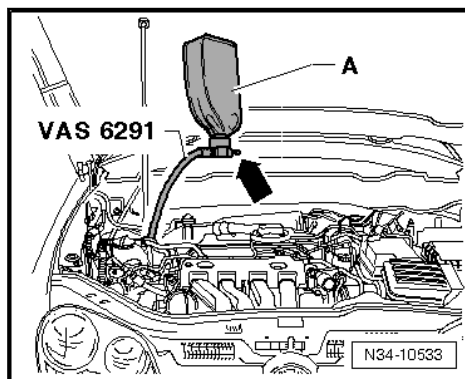
10.2 Gear Oil in Bevel Box, Filling

Requirements

- Bevel box must be in the installation position.
- Remove the right drive axle heat shield from the bevel box -arrows-.

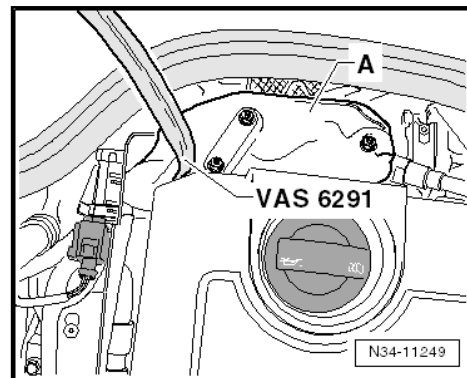


- Use the Charging Device for AWD Clutch Coupling 2 -VAS 6291A- to fill.



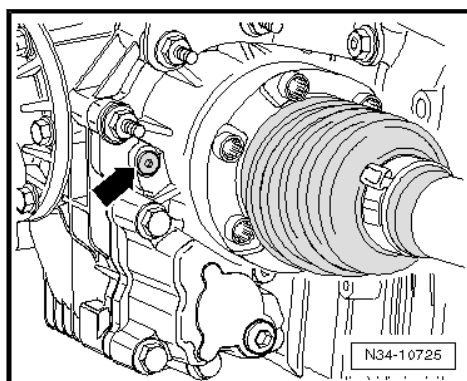


- Route the hose from the Charging Device for AWD Clutch Coupling 2 -VAS 6291A- through the engine compartment.
- If the vehicle has a particulate filter -A-, guide the hose from the Charging Device for AWD Clutch Coupling 2 -VAS 6291A- past the particulate filter on the right side.

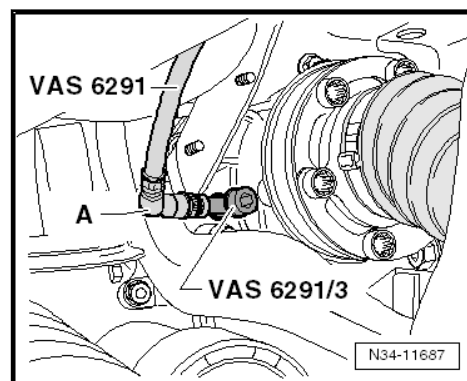


Note

Cover the area under the transmission fluid fill plug -arrow- with a cloth.



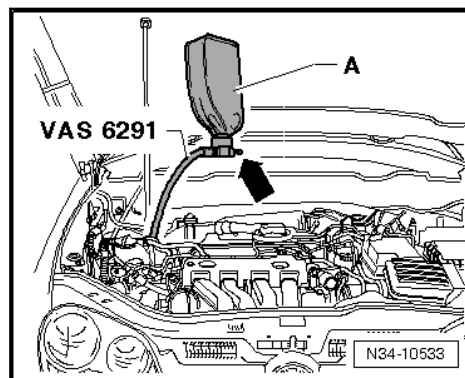
- Place the Used Oil Collection and Extraction Unit - SMN372500- under the bevel box.
- Remove the transmission fluid fill plug -arrow- in the bevel box.
- Disconnect the Charging Device For AWD Clutch Coupling 2 - Adapter 3 -VAS 6291/3- and the elbow -A-.
- Install the Adapter until it stops.



- Attach the elbow -A- to the Adapter.



- Make sure that the valve -arrow- is closed.



- Screw the fluid container -A- onto the Charging Device for AWD Clutch Coupling 2 -VAS 6291A-.



Note

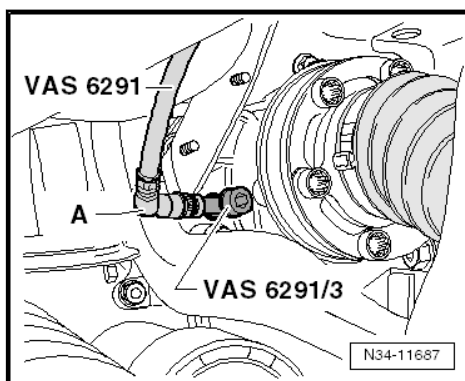
It is necessary to use the Wheel Alignment System - Wheel Adapter Extensions -VAS 6292/6- on some oil containers.

- The hose must not sag.
- Open the valve -arrow- and hold the oil container as shown.
The bevel box is now filled.
- Lift the vehicle after a few minutes.



Note

If the bevel box is filled correctly, fluid should leak out of the Adapter.

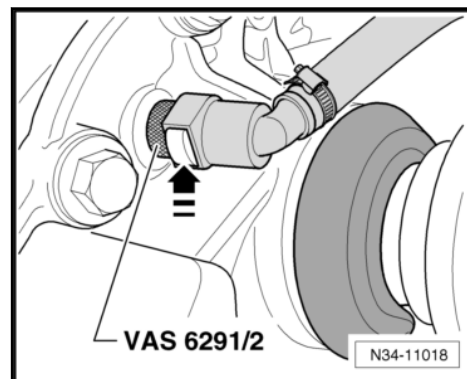


If no fluid is escaping, lower the vehicle and perform the filling procedure again.

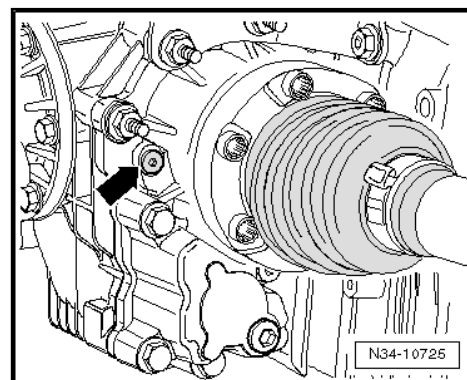
- Lift the vehicle.
- If fluid leaks from the Adapter, set down the fluid reservoir (for example, on a tool cart).

A portion of the excess oil runs back into the oil container.

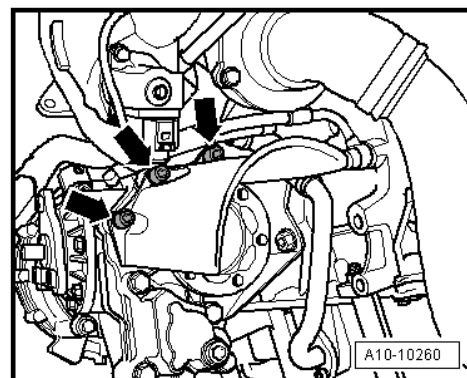
- When the fluid stops running back, press the catch in the -direction of the arrow- and remove the Charging Device for AWD Clutch Coupling 2. (Shown on the Charging Device for AWD Clutch Coupling 2 - Adapter 2 - VAS 6291/2-).



- Make sure there is still fluid in the hose of the Charging Device for AWD Clutch Coupling 2 -VAS 6291A-.
- Remove the Adapter.
- Install the new transmission fluid fill plug -arrow-.



- Tighten the fluid filler hole plug to the tightening specification. Refer to ➤ [S10.2.1 specification", page 299](#) .
- Carefully remove any fluid that has gotten onto the bevel box and other components.
- If equipped, attach the right drive axle heat shield to the bevel box -arrows- and tighten it to the tightening specification. Refer to ➤ [S10.2.1 specification", page 299](#) .



- Install the noise insulation. Refer to ➤ Body Exterior; Rep. Gr. 50; Noise Insulation.

10.2.1 Tightening Specification

Fluid Filler Plug ◆ Replace the bolt.	15 Nm
--	-------

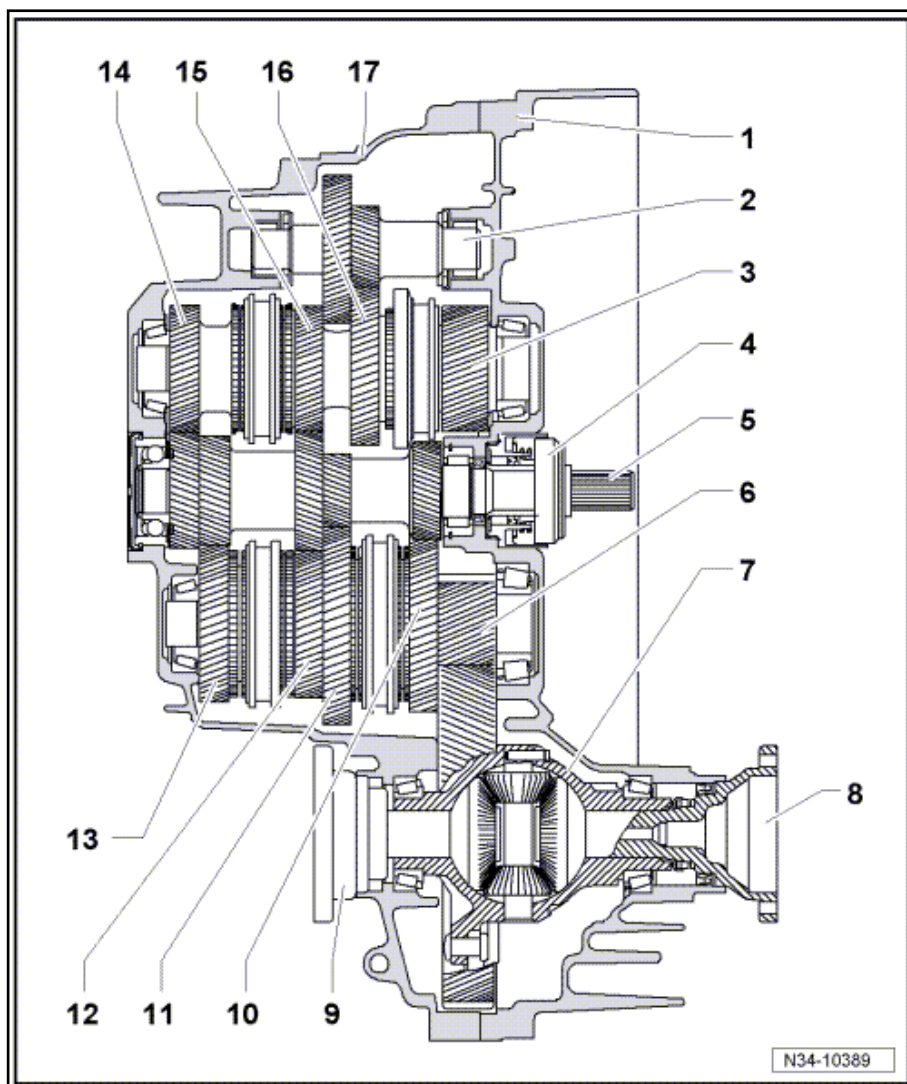


Right heat shield/ drive axle to bevel box	20 Nm
--	-------

11 Transmission, Disassembling and Assembling

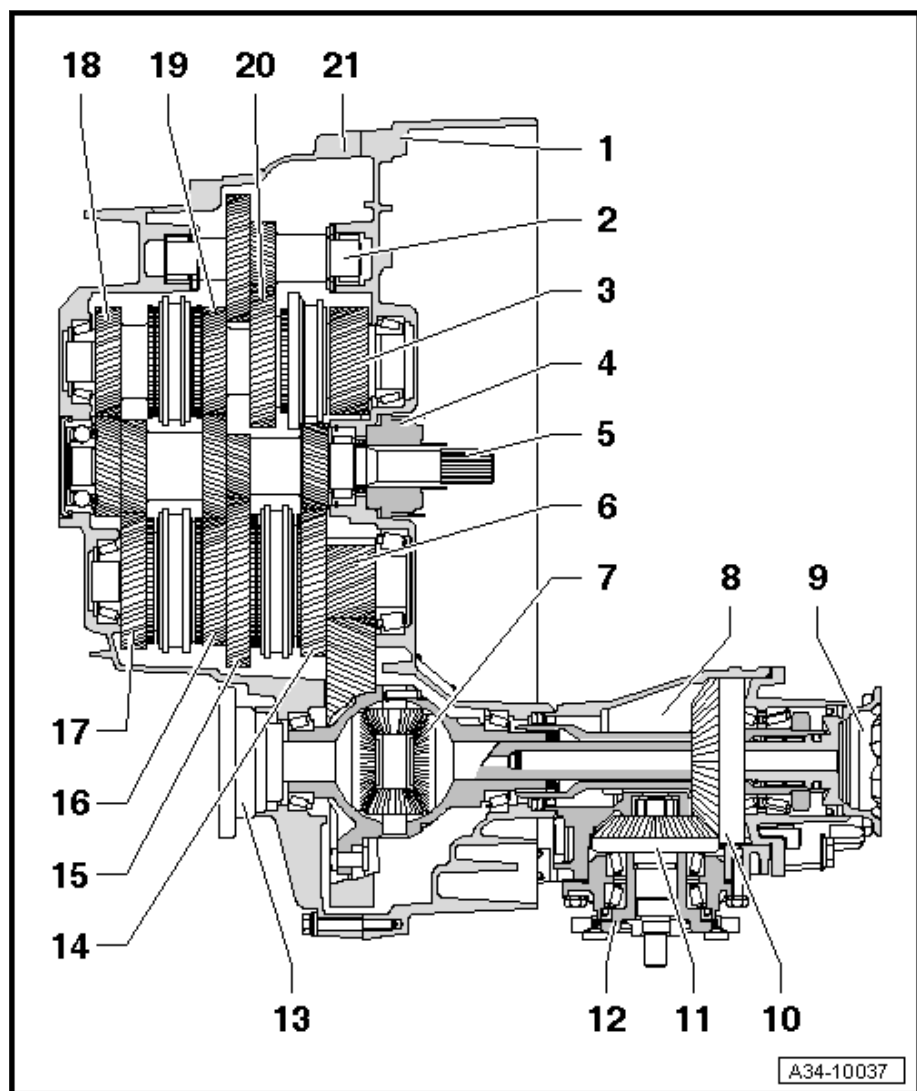
11.1 FWD - Transmission Overview

- 1 - Clutch Housing
- 2 - Reverse Shaft
- 3 - 5th, 6th and Reverse Gear Output Shaft
- 4 - Clutch Slave Cylinder with Release Bearing
- 5 - Input Shaft
- 6 - 1st through 4th Gear Output Shaft
- 7 - Differential
- 8 - Right Flange Shaft
- 9 - Left Flange Shaft
- 10 - 2nd Gear Assembly
- 11 - 1st Gear Assembly
- 12 - 4th Gear Assembly
- 13 - 3rd Gear Assembly
- 14 - 5th Gear Assembly
- 15 - 6th Gear Assembly
- 16 - Reverse Gear Assembly
- 17 - Transmission Housing



11.2 Transmission Overview - AWD

- 1 - Clutch Housing
- 2 - Reverse Shaft
- 3 - 5th, 6th and Reverse Gear Output Shaft
- 4 - Clutch Slave Cylinder with Release Bearing
- 5 - Input Shaft
- 6 - 1st through 4th Gear Output Shaft
- 7 - Differential
- 8 - Bevel Box
- 9 - Right Flange Shaft
- 10 - Head Bevel Gear with Input Shaft
- 11 - Shaft Bevel Gear
- 12 - Output Flange
- 13 - Left Flange Shaft
- 14 - 2nd Gear Assembly
- 15 - 1st Gear Assembly
- 16 - 4th Gear Assembly
- 17 - 3rd Gear Assembly
- 18 - 5th Gear Assembly
- 19 - 6th Gear Assembly
- 20 - Reverse Gear Assembly
- 21 - Transmission Housing

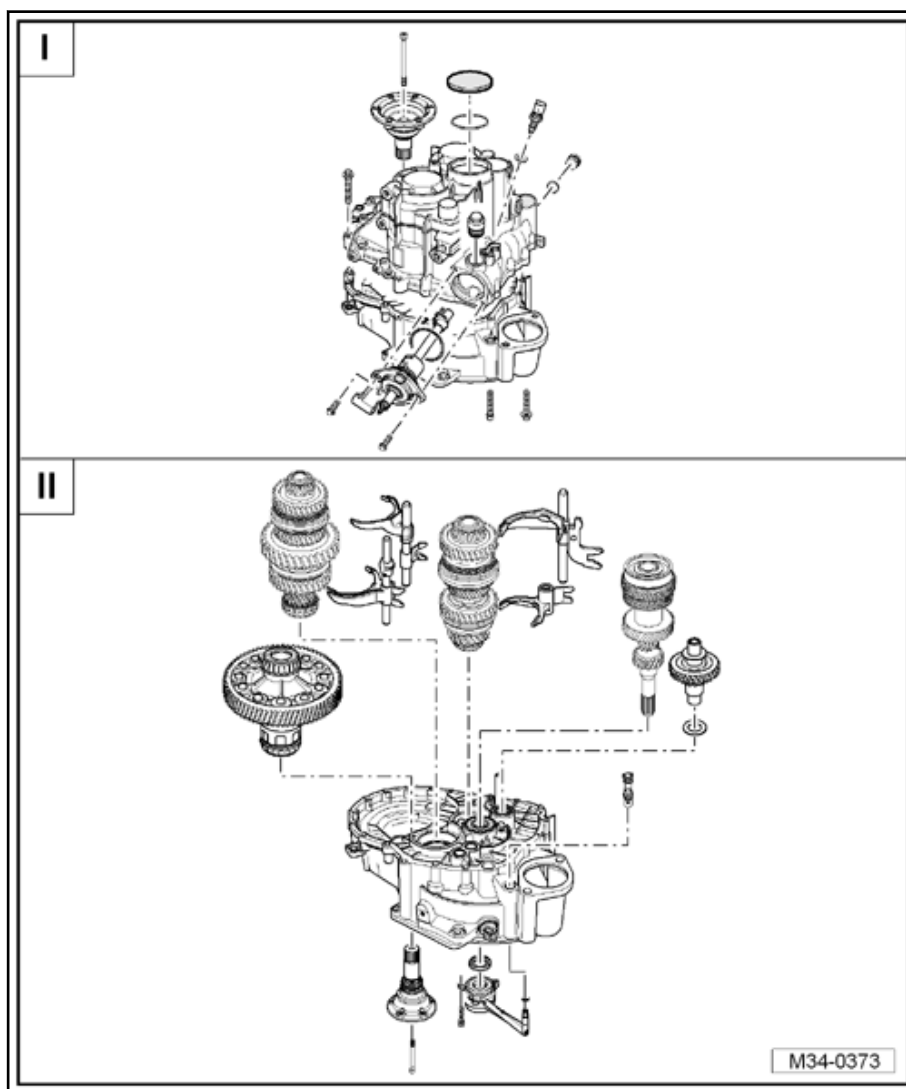


11.3 Overview - FWD



I - Overview - Transmission Housing and Selector Mechanism, Removing and Installing. Refer to ➤ [H11.5 Housing and Gearshift Mechanism, Removing and Installing](#), page 306 .

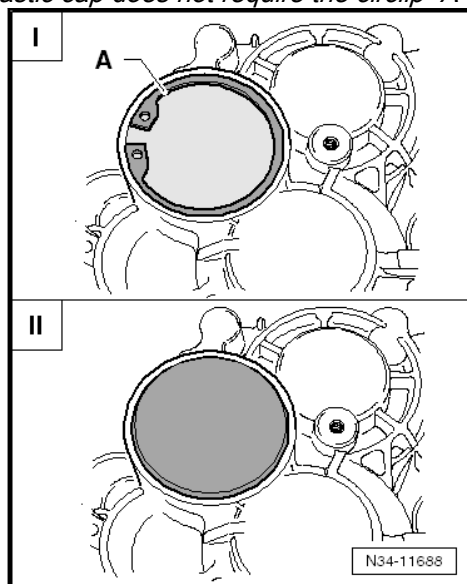
II - Input Shaft, Output Shafts, Differential and Shift Rods, Removing and Installing, FWD. Refer to ➤ [11.6 Input Shaft, Output Shafts, Differentials and Shift Rods, Removing and Installing, for FWD Vehicles](#), page 309 .





Note

- ◆ Metal and plastic covers are installed for the input shaft.
- ◆ The plastic cap does not require the circlip -A-.



I = Metal cover for input shaft		
Through transmission manufacture date 01/20/2008	»Without« circlip -A-	Assembly sequence. Refer to ⇒ S11.8 equence, Transmission without Circlip A for Metal Input Shaft Cap , page 314 .
From transmission manufacture date 1/21/2008	»With« circlip -A-	Assembly sequence. Refer to ⇒ S11.9 equence: I = Transmission with a Securing Ring A for Input Shaft Metal Cover; II = Transmission with Plastic Cover for Input Shaft , page 333 .

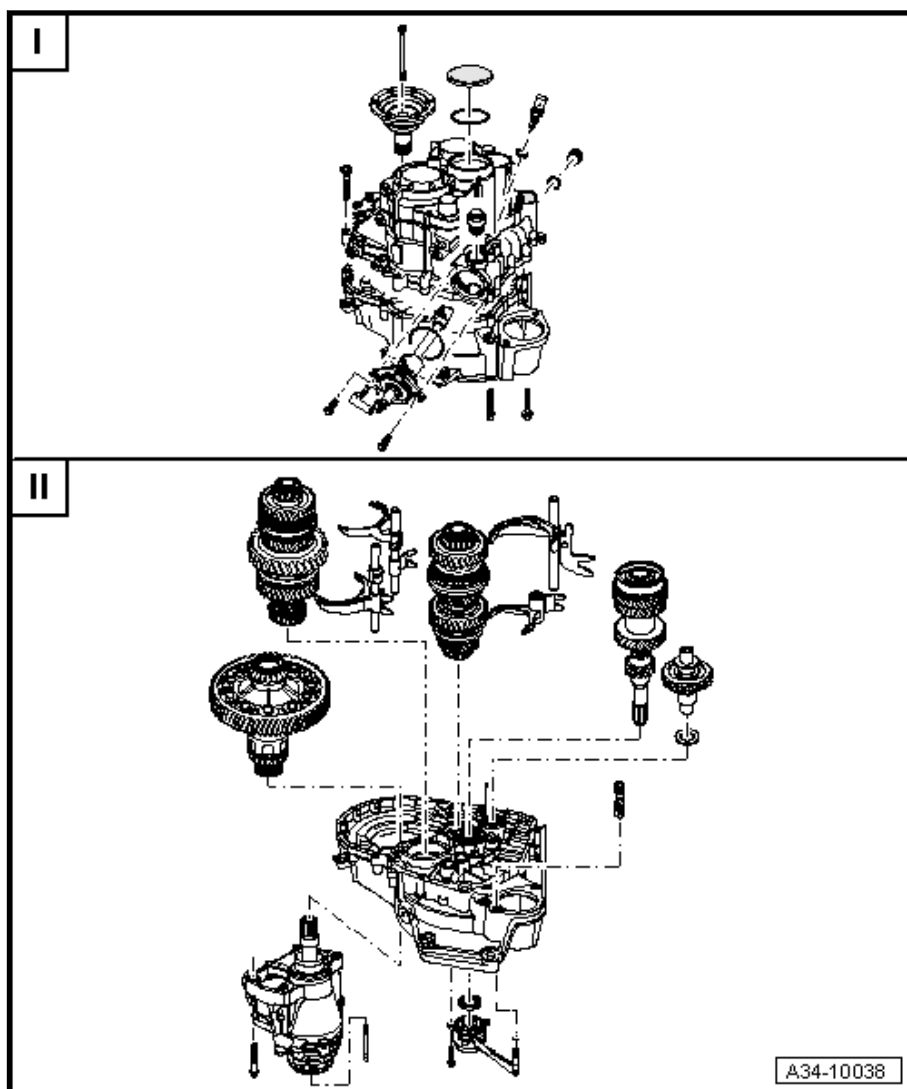
II = Plastic Cap for Input Shaft	
»Without« circlip -A-	Assembly sequence. Refer to ⇒ S11.9 equence: I = Transmission with a Securing Ring A for Input Shaft Metal Cover; II = Transmission with Plastic Cover for Input Shaft , page 333 .

11.4 Overview - AWD



I - Overview - Transmission Housing and Selector Mechanism. Refer to ➤ [H11.5 Housing and Gearshift Mechanism, Removing and Installing](#), page 306.

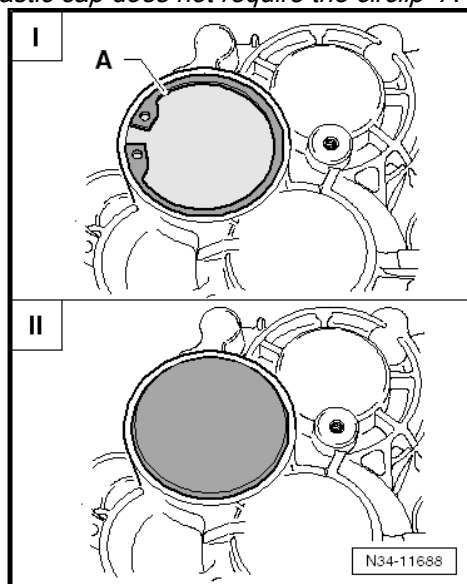
II - Overview - Input Shaft, Output Shafts, Differential, Bevel Box and Selector Rods for AWD Vehicles. Refer to ➤ [11.7 Input Shaft, Output Shaft, Differential, Bevel Box and Shift Rods, Removing and Installing, for AWD Vehicles](#), page 312





Note

- ♦ Metal and plastic covers are installed for the input shaft.
- ♦ The plastic cap does not require the circlip -A-.



I = Metal cover for input shaft		
Through transmission manufacture date 01/20/2008	»Without« circlip -A-	Assembly sequence. Refer to ⇒ S11.8 equence, Transmission without Circlip A for Metal Input Shaft Cap , page 314 .
From transmission manufacture date 1/21/2008	»With« circlip -A-	Assembly sequence. Refer to ⇒ S11.9 equence: I = Transmission with a Securing Ring A for Input Shaft Metal Cover; II = Transmission with Plastic Cover for Input Shaft , page 333 .

II = Plastic Cap for Input Shaft	
Always »without« securing ring -A-	Assembly sequence. Refer to ⇒ S11.9 equence: I = Transmission with a Securing Ring A for Input Shaft Metal Cover; II = Transmission with Plastic Cover for Input Shaft , page 333 .

11.5 Transmission Housing and Gearshift Mechanism, Removing and Installing



1 - Countersunk Bolt, 33 Nm

2 - Flange Shaft with Pressure Spring

- ☐ Removing and Installing. Refer to ➤ [F1.1 Flange Shaft Seal Replacing](#), page 455.
- ☐ Assembling. Refer to ➤ [D5.1 Disassembling and Assembling, FWD](#), page 495.

3 - Circlip

- ☐ For the metal cover
- ☐ Installed from transmission date of manufacture 01/20/2008
- ☐ Not used for a plastic cap

4 - Cap

- ☐ Made of metal or plastic
- ☐ Made of metal: secured with circlip ➤ [Item 3](#) (page 307) from transmission production date 1/21/2008
- ☐ Made of plastic: the circlip ➤ [Item 3](#) (page 307) is not required
- ☐ Allocate the components using the ➤ Electronic Parts Catalog (ETKA).

5 - Circlip

- ☐ For the grooved ball bearing/input shaft ➤ [Item 1](#) (page 384)

6 - Back-Up Lamp Switch -F4-, 20 Nm

- ☐ Short after series introduction of transmission with permanent seal ➤ [Item 7](#) (page 307)

7 - Seal

- ☐ Not installed on all transmissions
- ☐ Replace after removing

8 - Fluid Drain Plug

- ☐ Tightening Specification. Refer to ➤ [Fig. "Different Versions of Fluid Fill or Drain Plug"](#), page 256.

9 - Seal

- ☐ Replace after removing

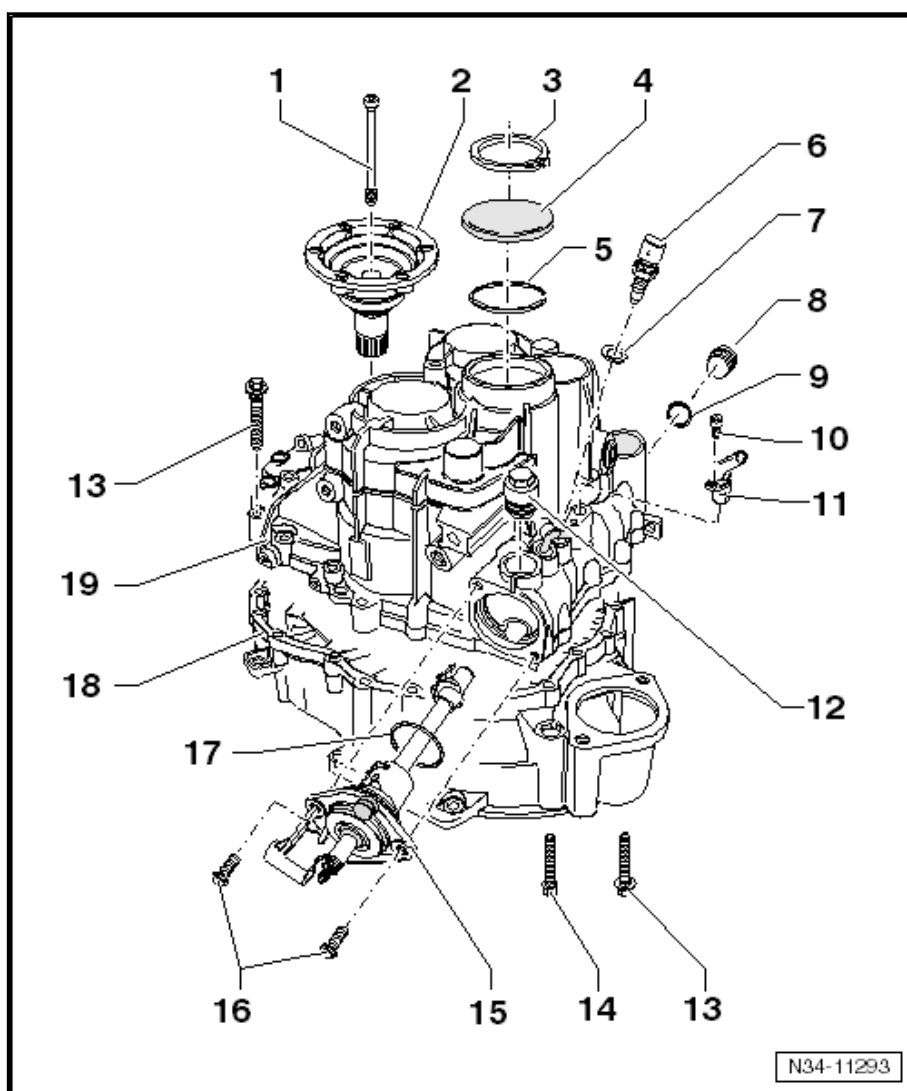
10 - Bolt, 6 Nm

11 - Transmission Neutral Position Sensor -G701-

- ☐ For vehicles with the Start/Stop System

12 - Locking Bolt

- ☐ For the gearshift shaft
- ☐ Replace locking bolt after removing
- ☐ Metal or plastic locking bolt





- ☐ Metal locking bolt: 45 Nm
- ☐ Plastic locking bolt: 30 Nm

13 - Bolt

- ☐ Replace after disassembling. Refer to the ⇒ Electronic Parts Catalog (ETKA) for allocation.
- ☐ There are different bolts and tightening specifications
- ◆ Internal hex round head = »through transmission manufacture date 12/6/2009«, M8 aluminum bolt = 8 Nm and 180° additional turn
- ◆ Internal hex round head = »through transmission manufacture date 12/7/2009«, M9 aluminum bolt = 15 Nm and 180° additional turn
- ◆ Outer hex head = steel bolt = 15 Nm and 90° additional turn
 - ☐ Replacement steel bolts allocation. Refer to ⇒ [Fig. ““For replacement steel bolts \(outer hex head\), pay attention to the allocation:””, page 308](#) .

14 - Bolt

- ☐ Replace after disassembling. Refer to the ⇒ Electronic Parts Catalog (ETKA) for allocation.
- ☐ There are different bolts and tightening specifications
- ◆ Internal hex round head = »through transmission manufacture date 12/6/2009«, M8 aluminum bolt = 8 Nm and 180° additional turn
- ◆ Internal hex round head = »through transmission manufacture date 12/7/2009«, M9 aluminum bolt = 15 Nm and 180° additional turn
- ◆ Outer hex head = steel bolt = 15 Nm and 90° additional turn
 - ☐ Replacement steel bolts allocation. Refer to ⇒ [Fig. ““For replacement steel bolts \(outer hex head\), pay attention to the allocation:””, page 308](#) .

15 - Shift Unit

- ☐ (Gearshift shaft with gearshift cover)
- ☐ Servicing. Refer to ⇒ [U14 nit, Servicing”, page 373](#) .
- ☐ Removing with the transmission installed:
- ◆ Remove the battery and the battery tray. Refer to ⇒ Electrical Equipment; Rep. Gr. 27; Battery; Battery, Removing and Installing.
- ◆ The locking elbow ⇒ [Item 6 \(page 358\)](#) for adjusting the shift mechanism must not be engaged
- ◆ Remove the cables and gearshift lever. Refer to ⇒ [-1.7 Operating Cables”, page 102](#) .
- ◆ Remove the locking bolt ⇒ [Item 12 \(page 307\)](#) and remove the shift mechanism

16 - Bolt, 20 Nm

- ☐ Replace after removing

17 - O-Ring

- ☐ Replace after removing

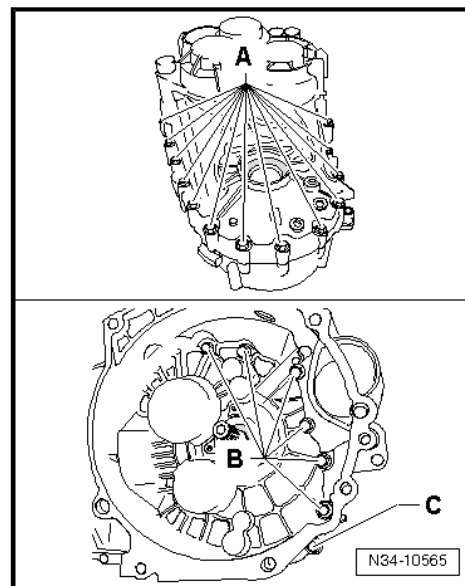
18 - Clutch Housing

- ☐ Servicing. Refer to ⇒ [H13 ousing, Servicing”, page 367](#) .

19 - Transmission Housing

- ☐ Servicing. Refer to ⇒ [H12 ousing, Servicing”, page 354](#) .

For replacement steel bolts (outer hex head), pay attention to the allocation:



A - Bolt with Attached Washer

B - Bolt without Washer

C - Bolt with Attached Washer

11.6 Overview - Input Shaft, Output Shafts, Differentials and Shift Rods, Removing and Installing, for FWD Vehicles



1 - 1st through 4th Gear Output Shaft

- ❑ Disassembling and Assembling. Refer to ➤ [t2.2 o 4th Gear Output Shaft, Disassembling and Assembling](#), page 396 .
- ❑ Installation position. Refer to ➤ [a11.6.1 nd Selector Rods in Transmission Installation Position](#), page 311 .

2 - Shift Rod with 1st and 2nd Gear Shift Fork

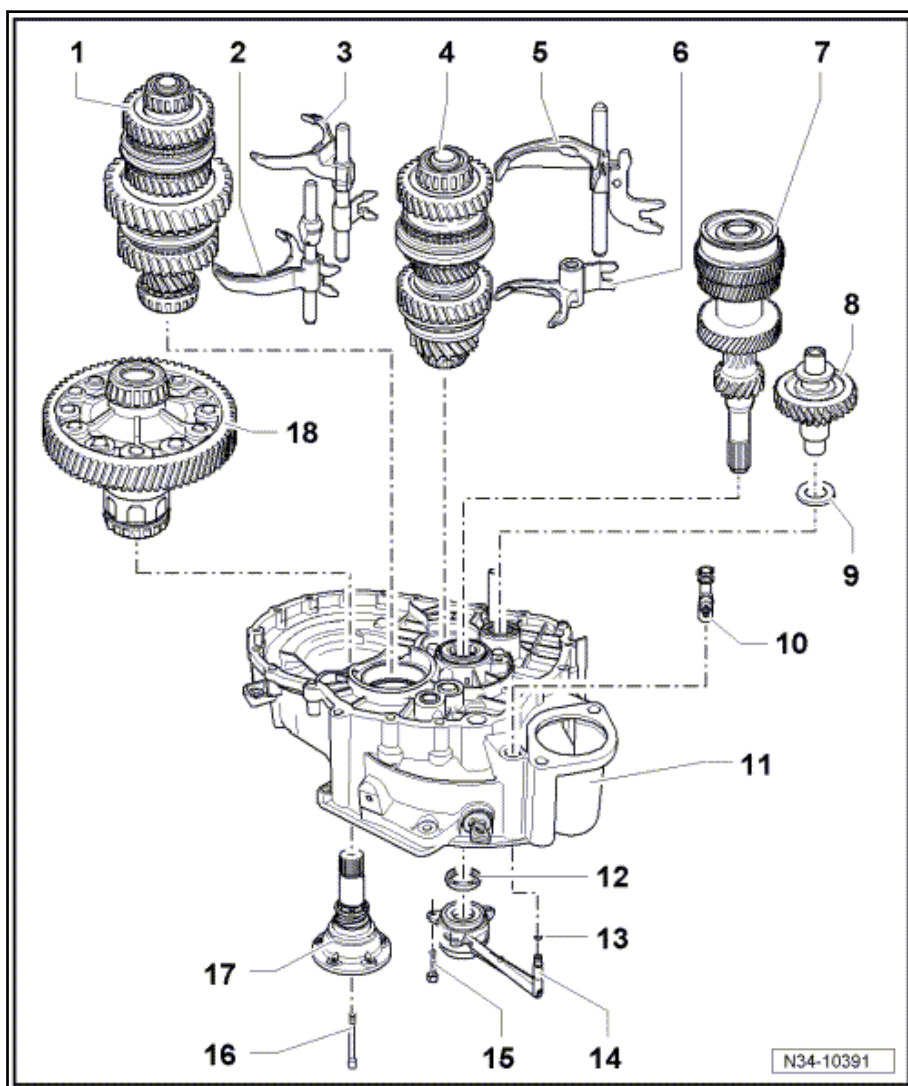
- ❑ Installation position. Refer to ➤ [a11.6.1 nd Selector Rods in Transmission Installation Position](#), page 311 .

3 - Shift Rod with 3rd and 4th Gear Shift Fork

- ❑ Installation position. Refer to ➤ [a11.6.1 nd Selector Rods in Transmission Installation Position](#), page 311 .

4 - 5th, 6th and Reverse Gear Output Shaft

- ❑ Disassembling and Assembling. Refer to ➤ [63 th and Reverse Gear Output Shaft](#), page 434 .
- ❑ Installation position. Refer to ➤ [a11.6.1 nd Selector Rods in Transmission Installation Position](#), page 311 .



5 - Shift Rod with 5th and 6th Gear Shift Fork

- ❑ Installation position. Refer to ➤ [a11.6.1 nd Selector Rods in Transmission Installation Position](#), page 311 .

6 - Reverse Gear Shift Fork

- ❑ Installation position. Refer to ➤ [a11.6.1 nd Selector Rods in Transmission Installation Position](#), page 311 .
- ❑ Characteristics. Refer to ➤ [Fig. “Reverse Gear Shift Forks, Differentiating”](#), page 380 .
- ❑ Servicing. Refer to ➤ [F15 orks, Servicing](#), page 379 .

7 - Input Shaft

- ❑ Disassembling and Assembling. Refer to ➤ [-1.1 Input Shaft](#), page 383 .
- ❑ Replace grooved ball bearing on drive axle after removing -Item 6- ➤ [Item 6 \(page 384\)](#) .

8 - Reverse Shaft

- ❑ With a thrust washer

9 - Thrust Washer

10 - Bleeder

- ❑ Connect with clutch slave cylinder -Item 14- ➤ [Item 14 \(page 311\)](#)

11 - Clutch Housing



- ☐ Servicing. Refer to ➤ [H13 ousing, Servicing", page 367](#) .

12 - Input Shaft Seal

- ☐ Replacing. Refer to ➤ [S3.4 haft Seal, Replacing", page 64](#) .

13 - O-Ring

- ☐ Install on the line connection
- ☐ Coat with brake fluid before installing

14 - Clutch Slave Cylinder with Release Bearing

15 - Bolt

- ☐ Quantity: 3
- ☐ Replace after removing
- ☐ Removing and Installing. Refer to-Item 4- ➤ [Item 4 \(page 58\)](#) .

16 - Countersunk Bolt, 33 Nm

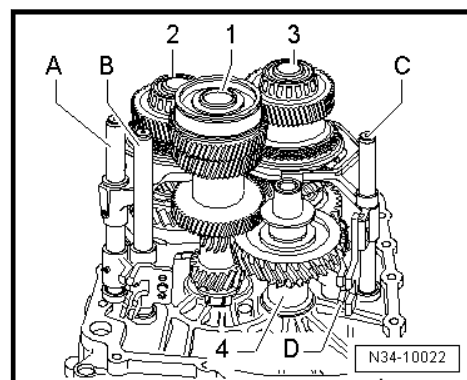
17 - Flange Shaft with Pressure Spring

- ☐ Removing and Installing. Refer to ➤ [S1 haft Seals, Manual Transmission Installed, Replacing for FWD Vehicles", page 455](#) .
- ☐ Assembling. Refer to ➤ [D5.1 isassembling and Assembling, FWD", page 495](#) .

18 - Differential

- ☐ Disassembling and Assembling. Refer to ➤ [D5.1 isassembling and Assembling, FWD", page 495](#) .

11.6.1 Shafts and Selector Rods in Transmission Installation Position



1 - Input Shaft

2 - 1st through 4th Gear Output Shaft

3 - 5th, 6th and Reverse Gear Output Shaft

4 - Reverse Shaft

A - 3rd and 4th Gear Shift Rod

B - 1st and 2nd Gear Shift Rod

C - 5th and 6th Gear Shift Rod

D - Reverse gear shift fork ¹⁾

¹⁾ On some transmissions, the bearing on the reverse gear shift fork on the shift rod for 5th and 6th gear shift fork -C-. Refer to ➤ [Fig. "The reverse gear shift fork -1- is mounted on the gear-shift rod with the 5th and 6th gear shift fork -2-.", page 344](#) . Difference, reverse gear shift forks. Refer to ➤ [Fig. "Reverse Gear Shift Forks, Differentiating", page 380](#) .



11.7 Overview - Input Shaft, Output Shaft, Differential, Bevel Box and Shift Rods, Removing and Installing, for AWD Vehicles



1 - 1st through 4th Gear Output Shaft

- ❑ Installation position. Refer to ➤ [a11.6.1 nd Selector Rods in Transmission Installation Position](#), page 311 .
- ❑ Disassembling and Assembling. Refer to ➤ [t2.2 o 4th Gear Output Shaft, Disassembling and Assembling](#), page 396 .

2 - Shift Rod with 1st and 2nd Gear Shift Fork

- ❑ Installation position. Refer to ➤ [a11.6.1 nd Selector Rods in Transmission Installation Position](#), page 311 .
- ❑ Servicing. Refer to ➤ [F15 orks, Servicing](#), page 379 .

3 - Shift Rod with 3rd and 4th Gear Shift Fork

- ❑ Installation position. Refer to ➤ [a11.6.1 nd Selector Rods in Transmission Installation Position](#), page 311 .
- ❑ Servicing. Refer to ➤ [F15 orks, Servicing](#), page 379 .

4 - 5th, 6th and Reverse Gear Output Shaft

- ❑ Installation position. Refer to ➤ [a11.6.1 nd Selector Rods in Transmission Installation Position](#), page 311 .
- ❑ Disassembling and Assembling. Refer to ➤ [63 th and Reverse Gear Output Shaft](#), page 434 .

5 - Shift Rod with 5th and 6th Gear Shift Fork

- ❑ Installation position. Refer to ➤ [a11.6.1 nd Selector Rods in Transmission Installation Position](#), page 311 .

6 - Reverse Gear Shift Fork

- ❑ Installation position. Refer to ➤ [a11.6.1 nd Selector Rods in Transmission Installation Position](#), page 311 .
- ❑ Characteristics. Refer to ➤ [Fig. ""Reverse Gear Shift Forks, Differentiating""](#), page 380 .
- ❑ Servicing. Refer to ➤ [F15 orks, Servicing](#), page 379 .

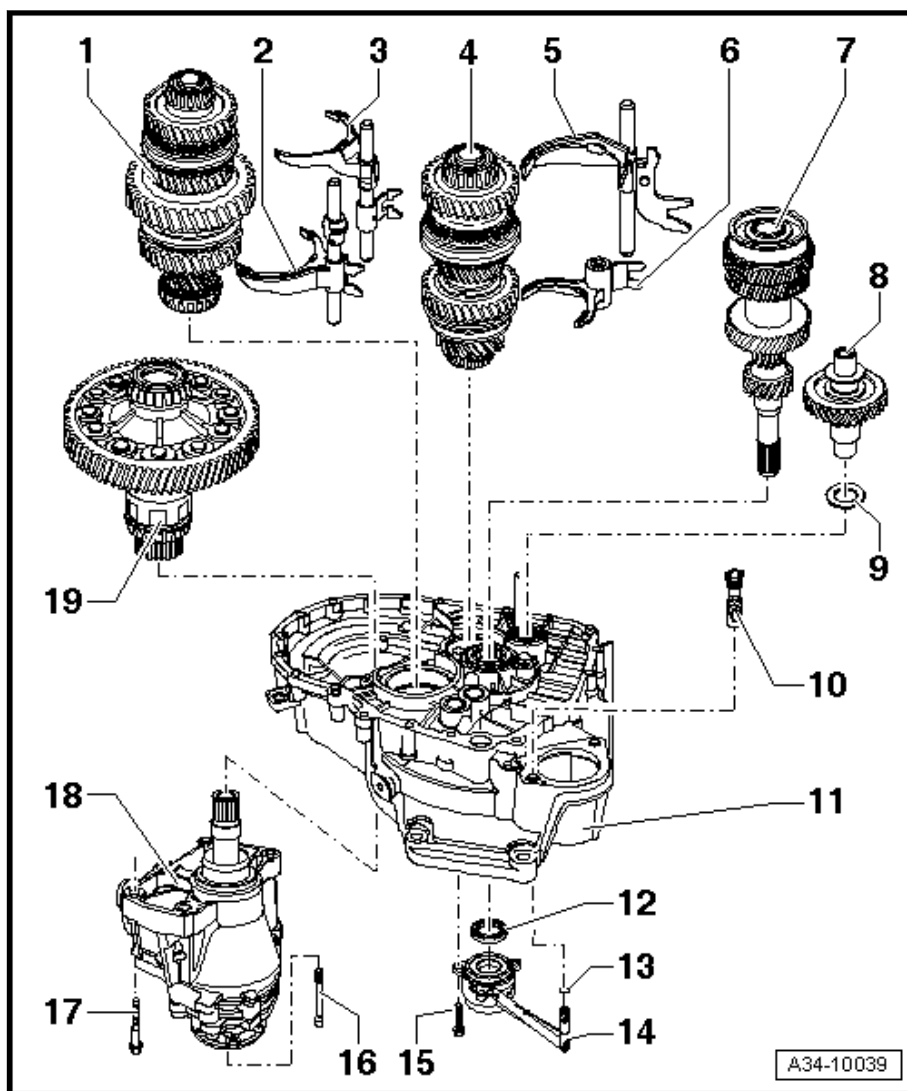
7 - Input Shaft

- ❑ Installation position. Refer to ➤ [a11.6.1 nd Selector Rods in Transmission Installation Position](#), page 311 .
- ❑ Disassembling and Assembling. Refer to ➤ [-1.1 Input Shaft](#), page 383 .
- ❑ Replace grooved ball bearing on drive axle after removing ➤ [Item 6 \(page 384\)](#) .

8 - Reverse Shaft

- ❑ With a thrust washer

9 - Thrust Washer



A34-10039



10 - Bleeder

- ☐ Connect with clutch slave cylinder

11 - Clutch Housing

- ☐ Servicing. Refer to [⇒ H13 ousing, Servicing", page 367](#) .

12 - Input Shaft Seal

- ☐ Replacing. Refer to [⇒ S3.4 haft Seal, Replacing", page 64](#) .

13 - O-Ring

- ☐ Install on the line connection
- ☐ Coat with brake fluid before installing

14 - Clutch Slave Cylinder with Release Bearing

15 - Bolt

- ☐ Quantity: 3
- ☐ Replace after removing
- ☐ Removing and Installing. Refer to -Item 4- [⇒ Item 4 \(page 58\)](#) .

16 - Bolt

- ☐ Removing and Installing. Refer to -Item 13- [⇒ Item 13 \(page 508\)](#) .

17 - Bolt - 40 Nm and turn 90° further

- ☐ Quantity: 4
- ☐ Replace after removing

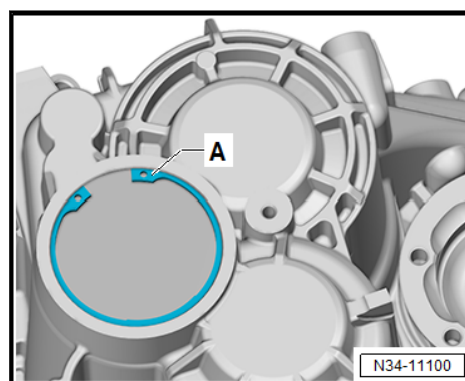
18 - Bevel Box

- ☐ Seals, flange shaft bearing and output flange bearing inside the bevel box. Refer to [⇒ -3 Seals, Flange Shaft Bearing and Output Flange Bearing Inside the Bevel Box", page 468](#) .

19 - Differential

- ☐ Disassembling and Assembling. Refer to [⇒ D5.2 isassembling and Assembling, AWD", page 503](#) .

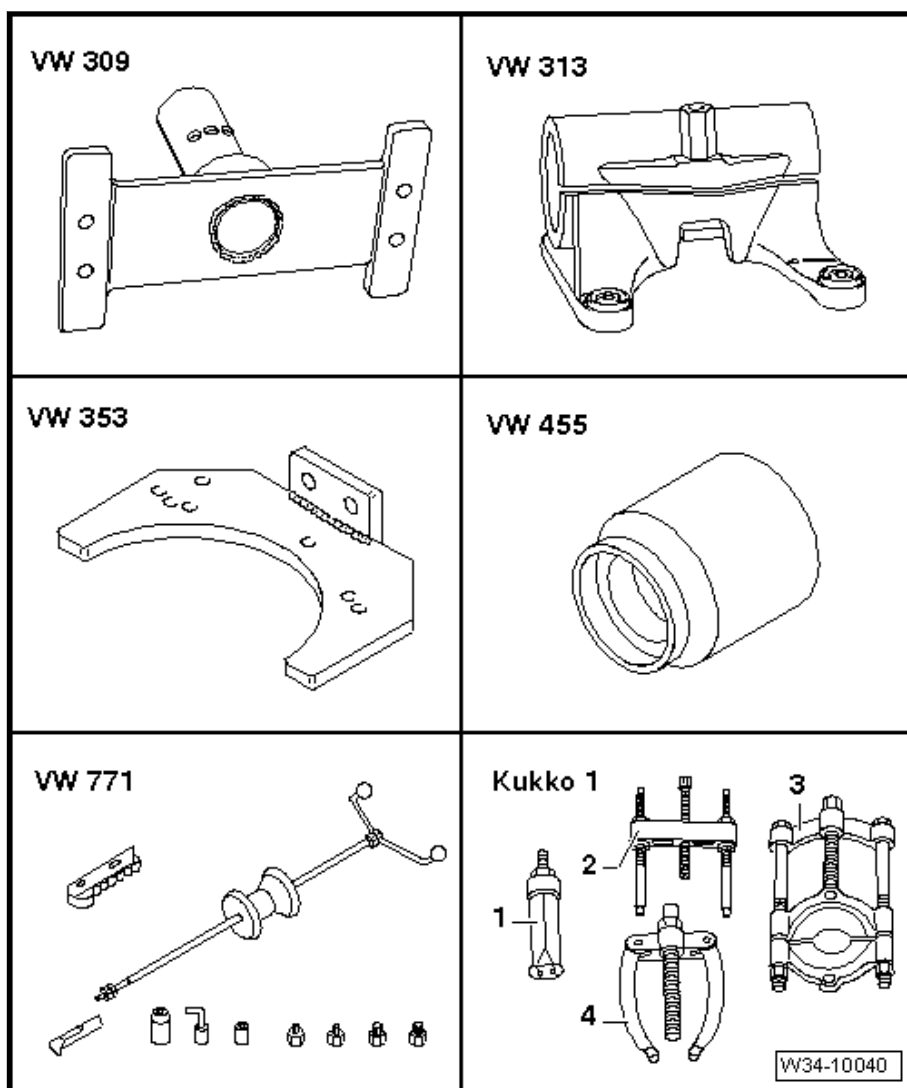
11.8 Assembly Sequence, Transmission »without« Circlip -A- for Metal Input Shaft Cap



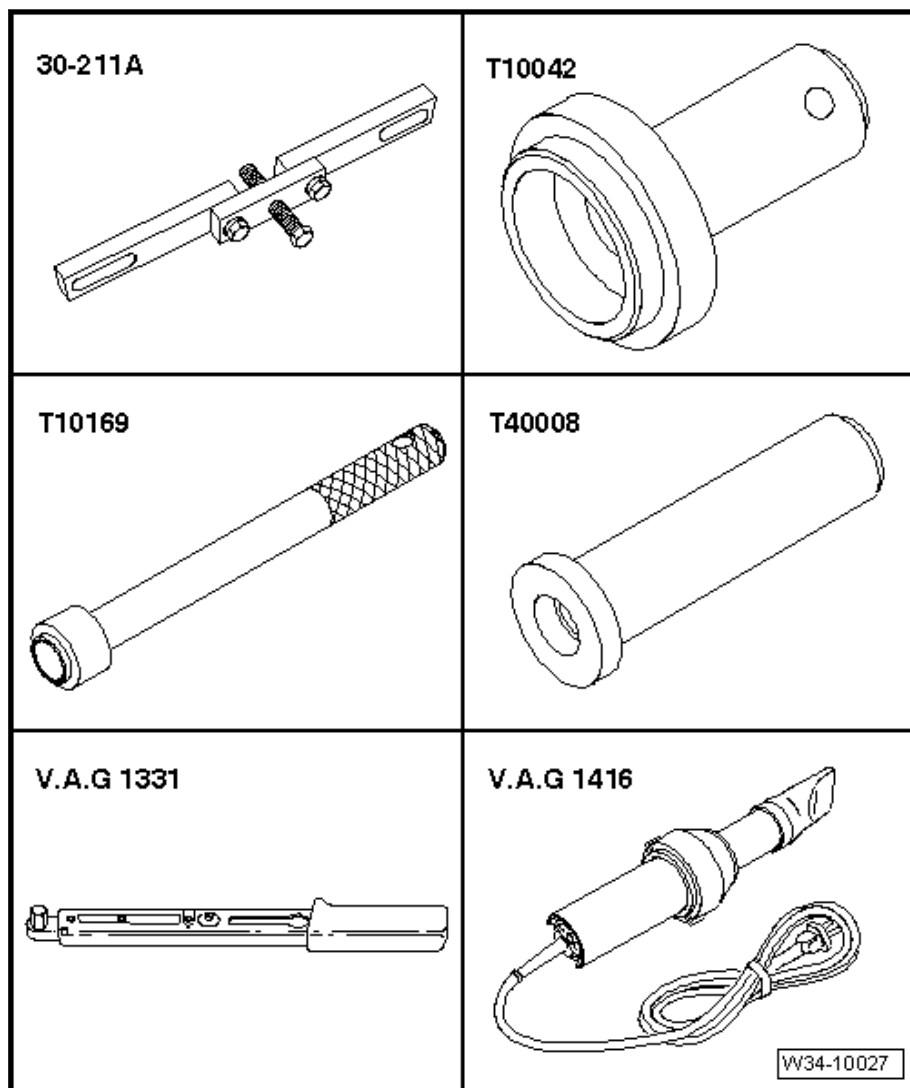
Transmission housing, shift mechanism, input shaft, output shafts, differential, selector rods and bevel box if necessary, removing and installing.



Special tools and workshop equipment required



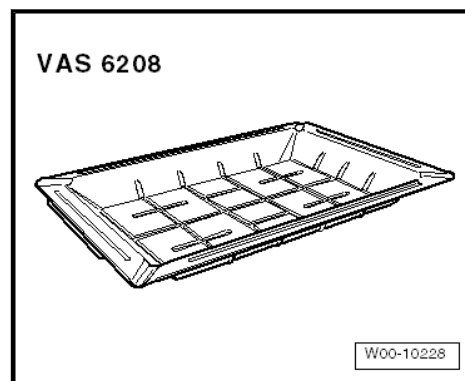
- ◆ Holding Plate -VW 309A-
- ◆ Holding Fixture -VW 313-
- ◆ Transmission Support -VW 353-
- ◆ Press Piece - Multiple Use -VW 455- or Press Piece - Front Wishbone -3160-
- ◆ Slide Hammer Set -VW 771-
- ◆ -1- Internal Puller -VAS 251 601-
- ◆ -3- Splitter -VAS 251407-
- ◆ -4- Counter Support -VAS 251621-



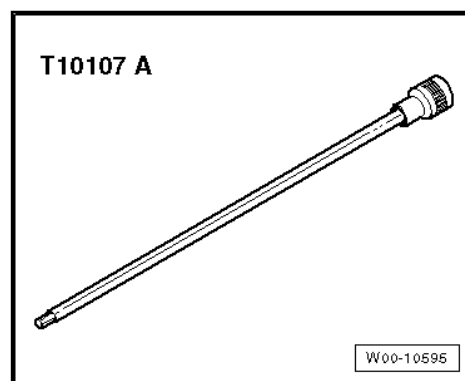
- ◆ Bracket - Multiple Use -30 - 211 A-
- ◆ Seal Installer - Crankshaft -T10042-
- ◆ Locking Sleeve Drift -T10169-
- ◆ or Locking Sleeve Drift -T10362-. Refer to ➤ [Fig. “Retaining Sleeve Differentiation”, page 362](#) .
- ◆ Seal Installer - Driveshaft -T40008-
- ◆ Torque Wrench 1331 5-50Nm -V.A.G 1331-
- ◆ Wiring Harness Repair Set - Hot Air Blower -VAS 1978/14A-



- ◆ Shop Crane - Drip Tray -VAS 6208-



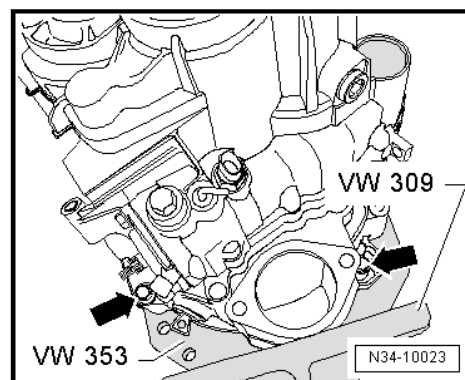
- ◆ Socket and Extended Bit -T10107 A-



- ◆ Sealing Compound -AMV 188 200 03-

11.8.1 Transmission, Disassembling

- Secure the transmission to the assembly stand with bolts -arrows-.

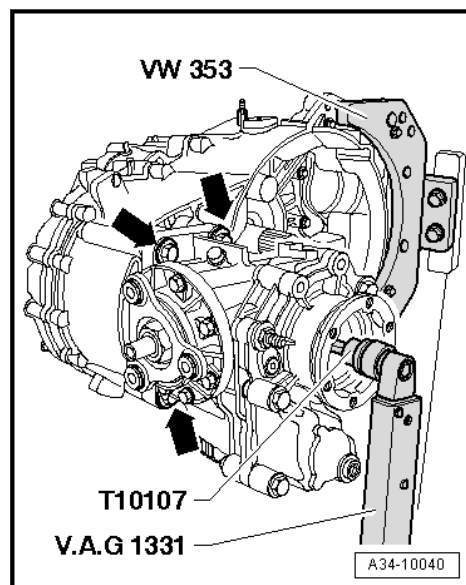


Note

If one of the fastening holes does not touch the Transmission Support, place shims between the hole and the Transmission Support.

- Turn the transmission in the assembly stand so that the drain plug is facing down.
- Place the Drip Tray underneath.
- Drain the transmission fluid from the manual transmission.

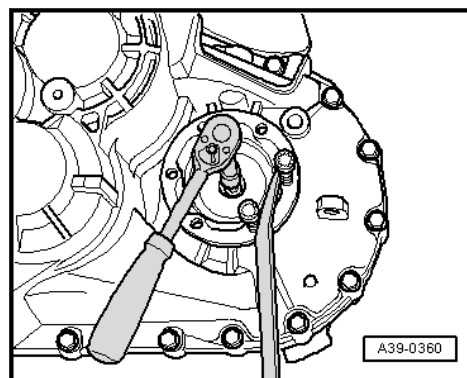
AWD Transmission



- Remove the bolt for the right flange shaft with the Socket Wrench for example Socket And Extended Bit -T10107 A-.
- Remove the four bolts -arrows- (only three bolts are shown) that attach the bevel box to the manual transmission.
- Carefully press bevel box off the manual transmission while protecting it against falling.

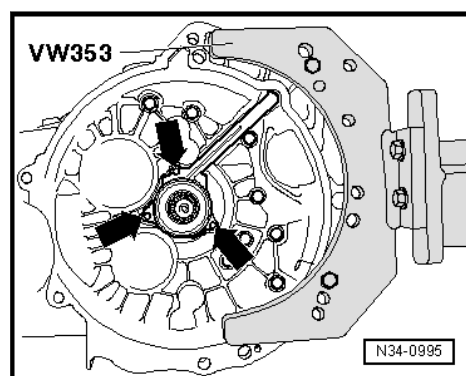
FWD Transmission

- Remove the right flange shaft (the illustration shows the left flange shaft).



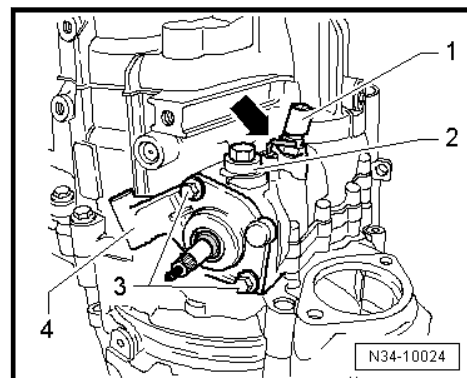
Continuation for All

- Remove the clutch slave cylinder with the release bearing -arrows-.





Make sure in the following step, that the gearshift shaft is not blocked by the lock elbow -arrow-.

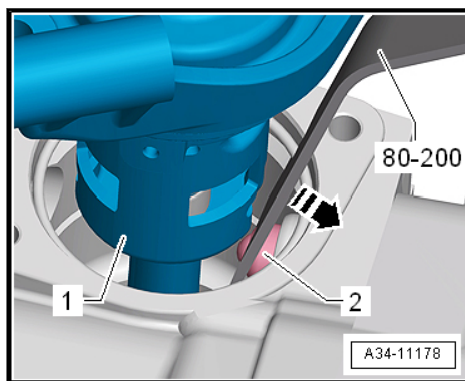


- Move the gearshift shaft into neutral.
- Remove the Back-Up Lamp Switch -F4- -1-.
- Remove the locking bolt -2-.
- Then remove the bolts -3-.
- Remove selector shaft with shift cover -4- from transmission housing.

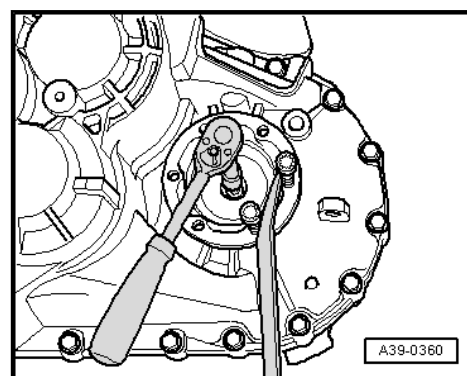


Note

Use the Pry Lever -80 - 200- to press against the spring force of the locking bushing in the -direction of the arrow- so that the gearshift shaft -1- does not touch the locking bushing -2- during removal.



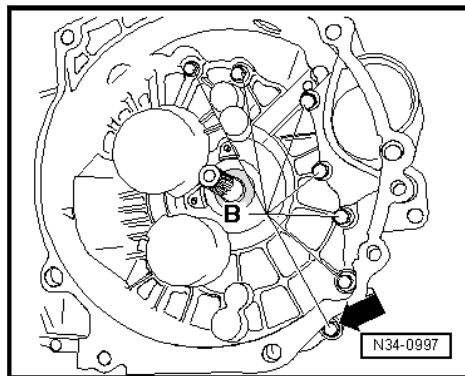
- Remove the left flange shaft bolt. To do this, install two bolts into the flange and counterhold the flange using a pry bar.



- Remove the left flange shafts and pressure spring.



- Remove the bolts -B- that connect the clutch housing to the transmission housing.



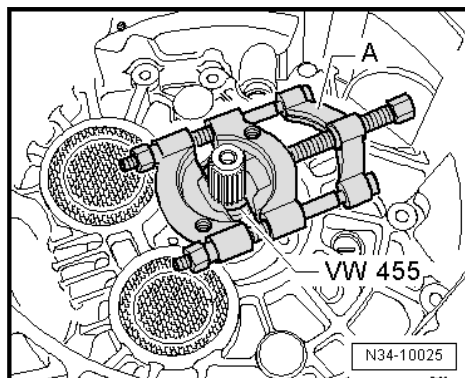
Note

One bolt -arrow- is located on the outside of the bolting flange.

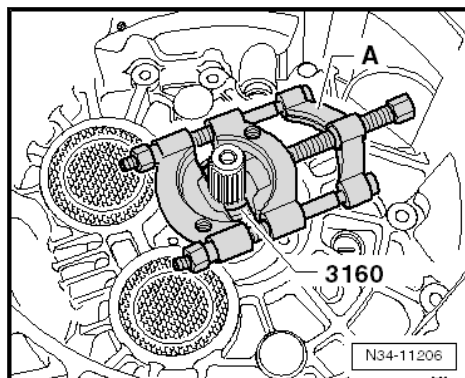
- Secure the input shaft as follows:

The stub shaft splines on the input shaft has different lengths on the transmission.

- Either place the Press Piece - Multiple Use -VW 455- over the input shaft on the clutch housing.



- Or place the Press Piece - Front Wishbone -3160- over the input shaft on the clutch housing.

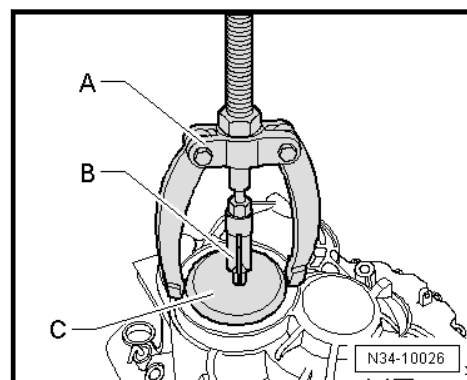


- Tension the Splitter -A- (for example, Splitter -VAS251407-) tightly behind the input shaft splines.

The rear side of the Splitter must touch the Press Piece - Multiple Use -VW 455- or the Press Piece - Front Wishbone -3160- without any play.



- Pierce the rubber piece in the center of the cap -C- with a screwdriver.

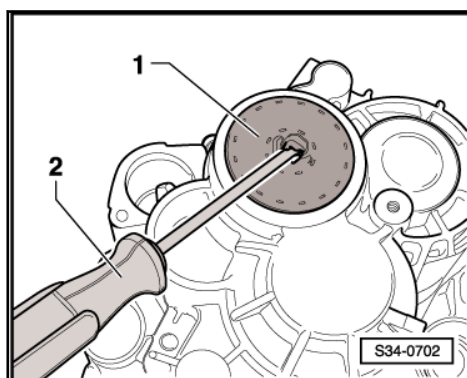


- Remove the cap from the transmission housing.
- A - Counter Support, for example -VAS 251 621-
B - Internal Puller 8 to 12 mm, for example Internal Puller -VAS 251603-



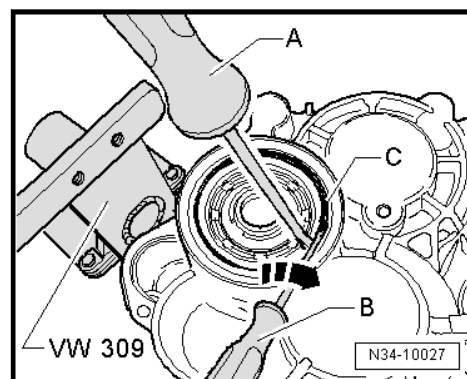
Note

Can push through the center of the cover for removing the cover -1-



Pry the cover -2- carefully off the transmission housing.

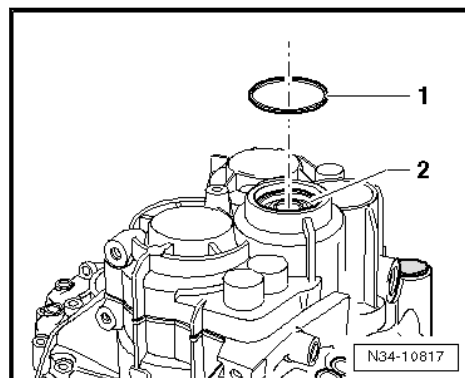
Remove the circlip -C- as follows from the grooved ball bearing for the input shaft/transmission housing:



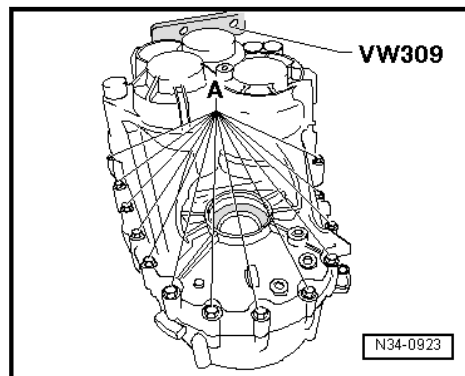
- Hold one end of the locking ring secure using the Screwdriver -A-.
- Pry the other end out of the groove in the grooved ball bearing in -direction of the arrow- using the Screwdriver -B-.



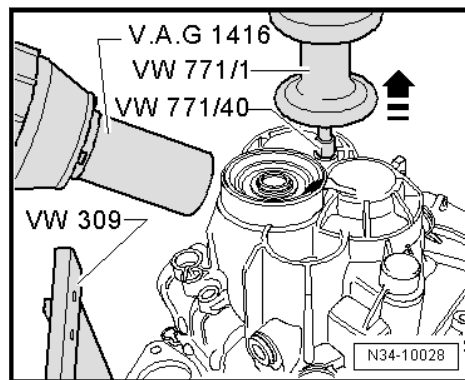
- Pry out the rest of the locking ring using the Screwdriver -B-.
- If equipped, remove the washer -1- from the transmission housing -2-.



- If transmission is replaced, see if the washer must be installed. Refer to [page 326](#).
- Remove the transmission housing bolts -A- from the clutch housing.



- Install the Slide Hammer Set - Adapter 40 -VW 771/40- into the threaded hole in the transmission housing.



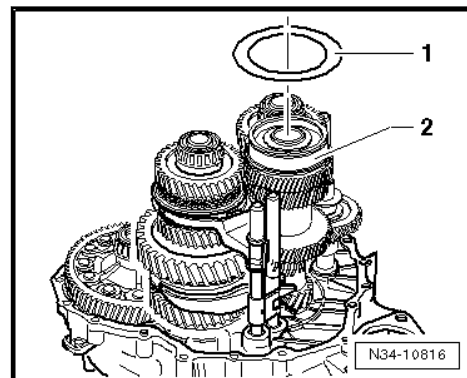
- Heat the transmission housing in the area near the bearing seat for the grooved ball bearing/input shaft to approximately 100 °C for approximately 10 minutes using a Hot Air Blower, for example, -V.A.G 1416-.
- Remove the transmission housing from the clutch housing in the -direction of the arrow- using Slide Hammer Set - Hammer -VW 771/1-.



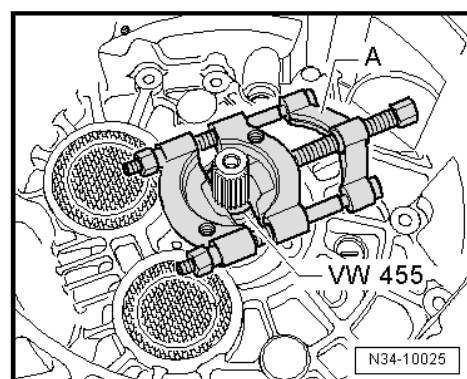
Note

If necessary, carefully use the pry lever to pry up all around at the protruding housing ridges while alternating between sides. Do not damage the sealing surfaces while doing so.

- If equipped, remove the washer -1- from the grooved ball bearing -2-.

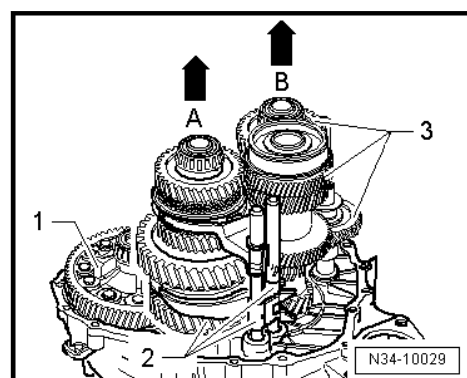


- If the transmission housing is being replaced, check if the washer must be installed again. Refer to ➤ [page 326](#) .
- Remove the Separating Tool -A- and the Press Piece - Multiple Use VW 455 (illustration) or the Press Piece - Front Wishbone -3160- from the input shaft.



A second technician is needed to help remove the shafts from the clutch housing.

- Lift the differential -1- with the left hand. With the right hand, left the output shaft for 1st to 4th gear together with the shift rods -2- -arrow A-.





- At the same time, the second technician lifts the input, reverse and output shaft for 5th/6th gear -3- together with the gearshift rods out of the clutch housing -arrow B-.



Note

If necessary, the differential can be placed back in the clutch housing again after lifting the shafts.

- Remove the input shaft seal.

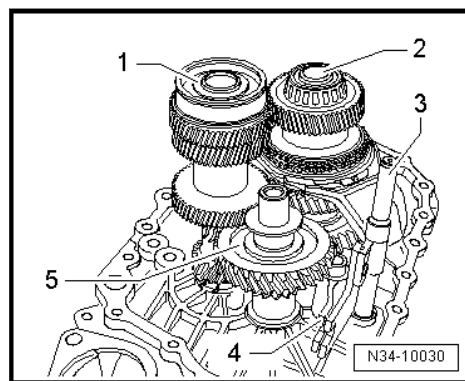


Note

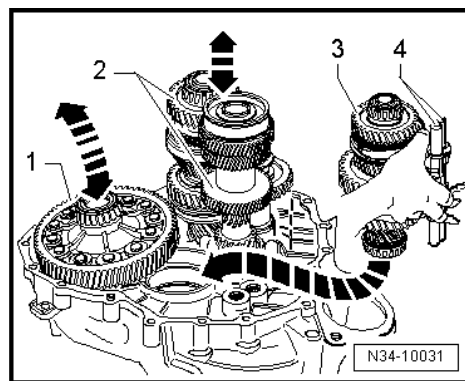
Always replace the grooved ball bearing on the input shaft -Item 6- ➔ [Item 6 \(page 384\)](#) .

11.8.2 Transmission, Assembling

- A new grooved ball bearing is pressed onto the input shaft -Item 6- ➔ [Item 6 \(page 384\)](#) .
- Install the input shaft -1-, the 5th/6th gear and reverse gear output shaft -2- the gearshift rod -3-, the shift fork -4- and the reverse shaft -5-.



- Then install the differential -1-.



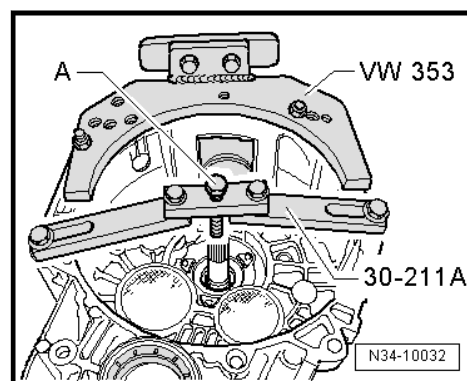
Note

A second technician is needed to help continue installing the shafts in the clutch housing.

- Hold the 1st to 4th gear output shaft -3- with the shift rods -4- in the right hand as shown.



- Lift the differential -1- slightly with the left hand.
- Have the second technician lift the input shaft, the 5th/6th gear output shaft and reverse gear -2- together with the reverse shaft slightly at the same time.
- Install the 1st to 4th gear output shaft in the -direction of the arrow-.
- The splines of the input shaft, output shafts and final drive wheel gear/differential must engage.
- Together with a second technician, position the shafts and the differential in their bearing seats.
- Secure the Bracket - Multiple Use -30 - 211 A- for the input shaft on the clutch housing.

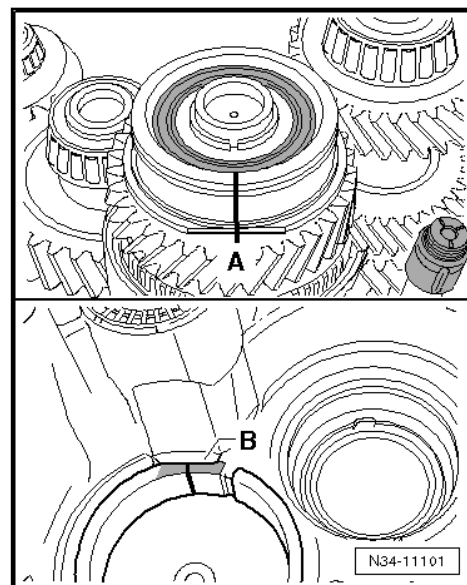


Note

The clutch housing is shown in the illustration rotated 180°.

- Install the bolt -A- just until the input shaft starts to lift.

On some transmissions, there are flat areas -A- on the grooved ball bearing for the input shaft and on the bearing mount -B-



Check the grooved ball bearing for the input shaft and the transmission housing.



Input Shaft Grooved Ball Bearing and Transmission Housing

No flattened sides on the grooved ball bearing -A- and bearing mount -B-. Refer to ➤ [page 326](#) .

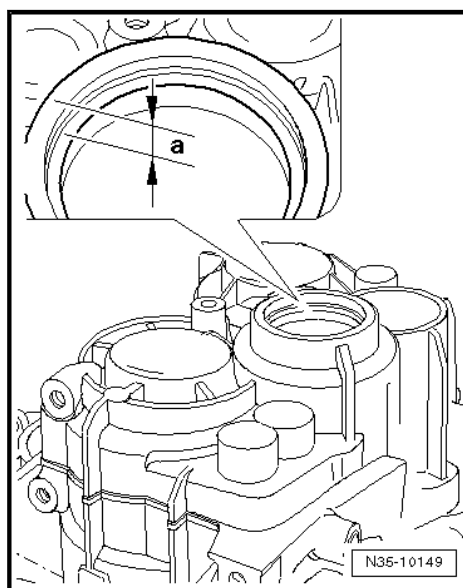
Flattened sides on the grooved ball bearing -A- and bearing mount -B-. Refer to ➤ [Fig. "On Some Transmissions:"](#), [page 327](#) .

From transmission build date 4/10/2006 through approximately 1/21/2008

One washer each is inserted above and below the input shaft grooved ball bearing ➤ [Item 6 \(page 384\)](#) .

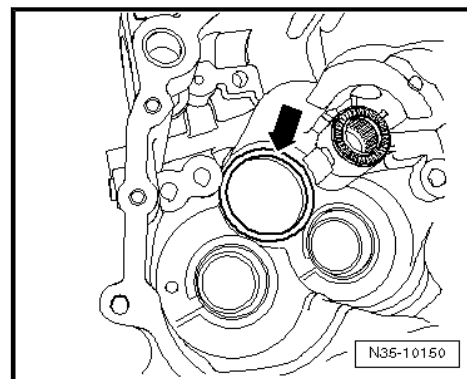
Upper washer	Outer diameter	78.6 mm
Lower washer	Outer diameter	85 mm

Measure the shoulder above the grooved ball bearing mount.



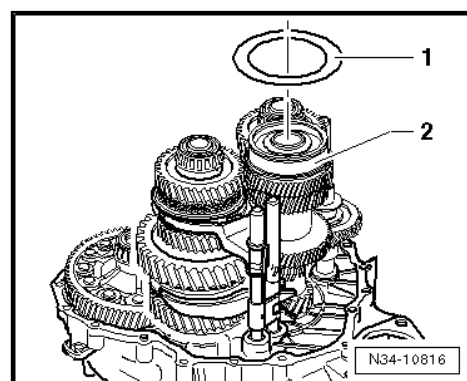
Shoulder above grooved ball bearing	Dimension "a"	Upper washer
Through transmission build date 04/09/2006	10 mm	no
From transmission build date 04/10/2006	10.7 mm	yes

The area under the grooved ball bearing seat in the transmission housing has been changed -arrow-

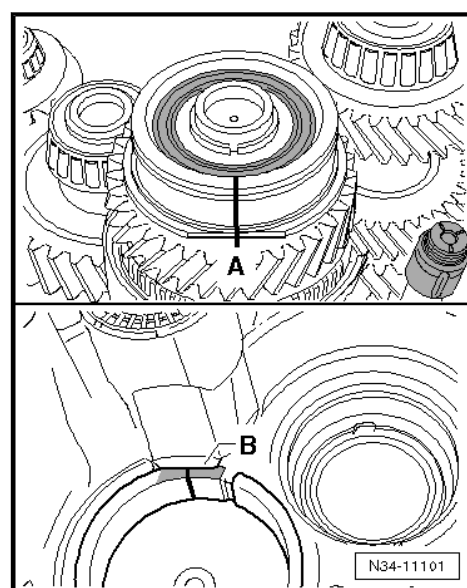


Area below the bearing seat		Lower washer
Through transmis- sion build date 04/09/2006	not deeper.	no
From transmis- sion build date 04/10/2006	slightly deeper.	yes

- If necessary, place a washer (outer diameter = 85 mm) -1- on the grooved ball bearing -2-.



On Some Transmissions:





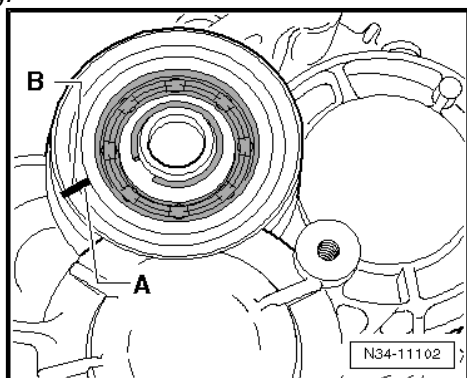
Flattened areas -A- on the input shaft grooved ball bearing and bearing mount -B-.

- Do not place any washers above and below the grooved ball bearing.
- The flattened sides -A- on the grooved ball bearing and on the bearing mount -B- must align in the transmission housing.
- Mark the flat side with color.
- Transfer the markings to the upper area of the grooved ball bearing and to the upper area of the transmission housing bearing mount (⇒ next illustration).
- Heat the transmission housing in the area near the bearing seat for the grooved ball bearing/input shaft to approximately 100 °C for approximately 10 minutes using a -Hot Air Blower-, for example, -V.A.G 1416-.

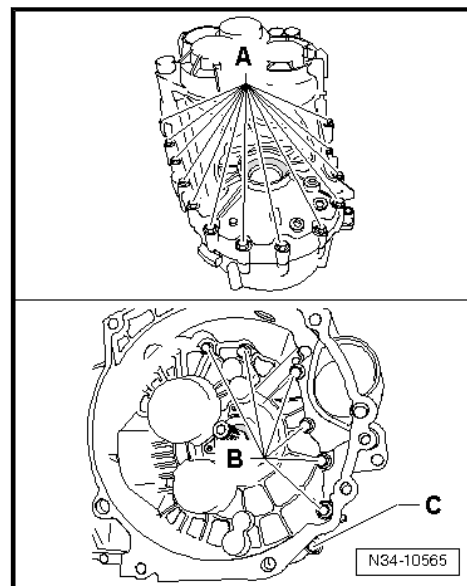


Note

- ◆ *It is necessary to heat the transmission housing so that the grooved ball bearing is not damaged when the housing is being installed.*
- ◆ *Align the marking on the grooved ball bearing -A- with the marking on the transmission housing -B- and mount the transmission housing.*



- For all transmissions heat the transmission housing with - Hot Air Blower- for example the Hot Air Blower V.A.G 1416 -V.A.G 1416- in the grooved ball bearing/input shaft bearing set area to 100 °C for approximately 10 minutes.
- Evenly apply the Sealing Compound -AMV 188 200 03- to the sealing surface of the clutch housing.
- Install the transmission housing and tighten the new bolts -A-, -B- and -C- to the tightening specification.



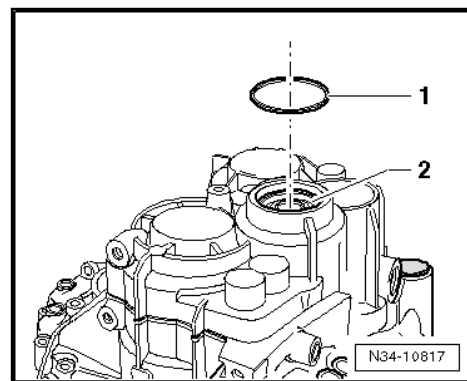
For replacement steel bolts (outer hex head), pay attention to the allocation:

A - Bolt with Attached Washer

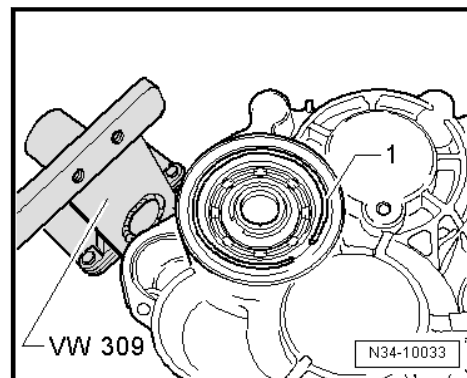
B - Bolt without Washer

C - Bolt with Attached Washer

- If a washer was mounted on the grooved ball bearing before installing the transmission housing, a washer -1- (outer diameter = 78.6 mm) must also be installed after installing the transmission housing -2-. Refer to ➤ [page 326](#) .



- Install the grooved ball bearing/input shaft circlip -1-.



- Remove the Bracket - Multiple Use -30 - 211 A- for the input shaft.

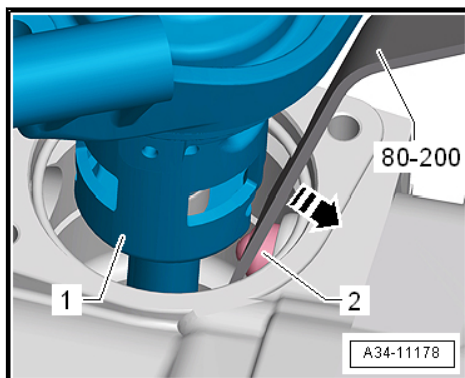


- If the retaining sleeve for the gearshift shaft was removed, install it now all the way up to the tool. Refer to ➔ [Fig. "Retaining Sleeve Differentiation", page 362](#).
- Turn the transmission so that the gearshift shaft opening faces upward in the assembly stand.

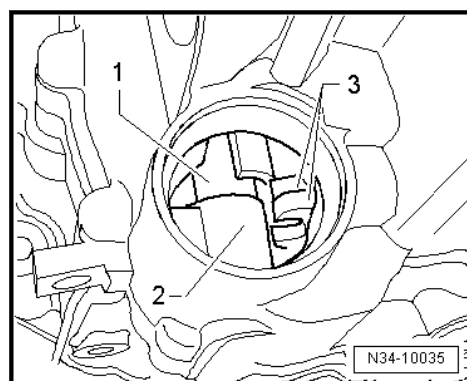


Note

Use the Pry Lever -80 - 200- to press against the spring force of the locking bushing in the -direction of the arrow- so that the gearshift shaft -1- does not touch the locking bushing -2- during installation.



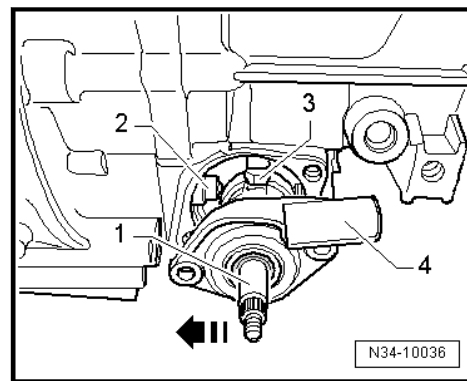
- Install the gearshift shaft -1- into the lower bearing -2- and into the shift forks -3-.



Note

For clarity, the cap ➔ [Item 2 \(page 358\)](#) is removed.

- Push the gearshift shaft -1- against the retaining sleeve -2- in the -direction of the arrow- and use the shift finger -3- to guide it all the way downward through the shift forks.



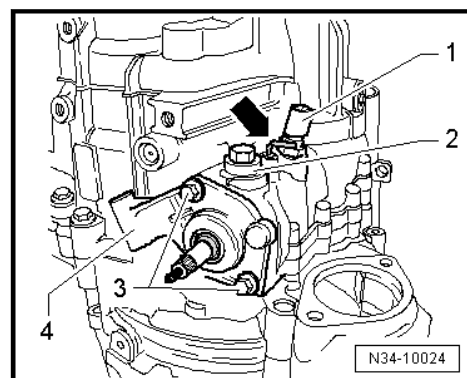
- The gearshift cover -4- must be parallel to the bolting surface on the transmission housing while doing so.
- It must be possible to move the gearshift shaft easily (forward and backward).



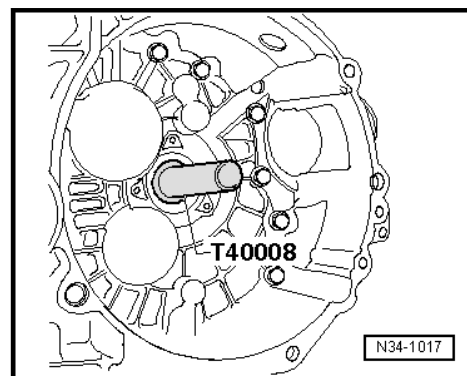
Note

If the gearshift cover is at an angle to the bolting surface, then the gearshift shaft was not inserted into the lower bearing.

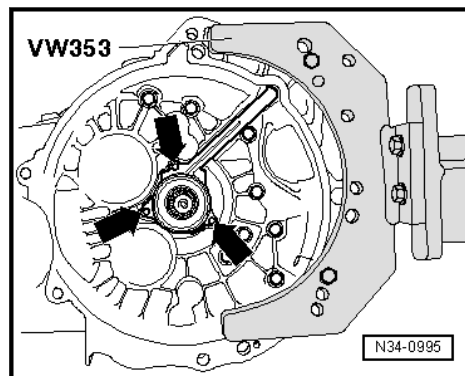
- Tighten the bolts -3- on the cover/gearshift shaft -4-.



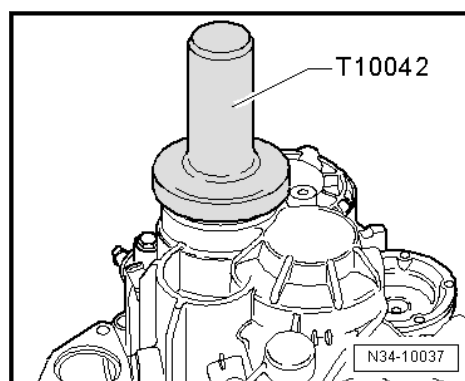
- Install the locking bolt -2-; the locking elbow -arrow- must not be installed when doing so.
- Install the Back-Up Lamp Switch -F4- -1-.
- Input Shaft Seal, Installing



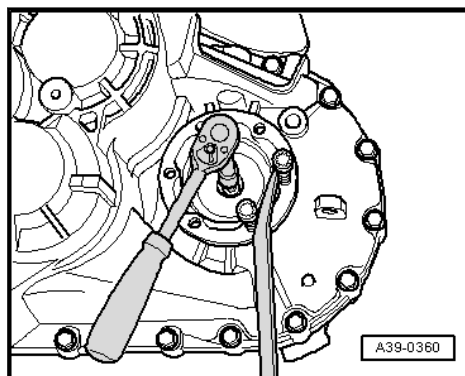
- Install the clutch slave cylinder with release bearing and tighten bolts -arrows- to tightening specification ➤ [Item 4 \(page 58\)](#).



- Move through all the gears.
- Drive the cap into transmission housing to all the way in the Seal Installer - Crankshaft -T10042-.



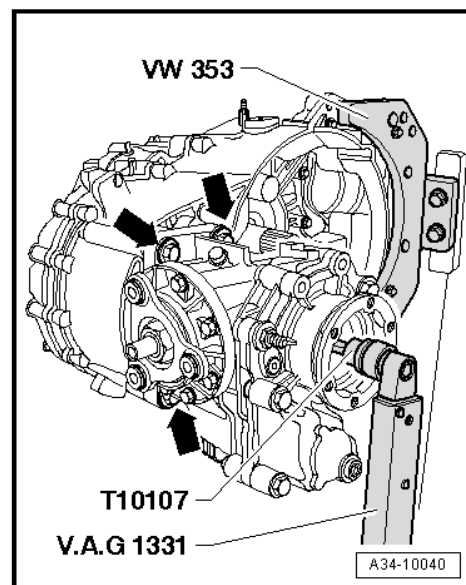
- Install the left flange shaft and pressure spring, the thrust washer and the tapered ring.



FWD Transmission

- Install the right flange shaft and pressure spring, the thrust washer and the tapered ring.

AWD Transmission



Attach the bevel box to the manual transmission as follows:

- For a manual transmission, lubricate the differential splines with Lubricating Grease for Clutch Plate Splines - G 000 100-.
- Slide on bevel box completely on manual transmission, while doing this, join drive axle/bevel box splines centrally with the differential.
- Align the right flange shaft splines with the differential bevel gear. Turn the flange shaft if necessary.
- With proper tooth position and central guiding, bevel box slides up to stop against manual transmission.



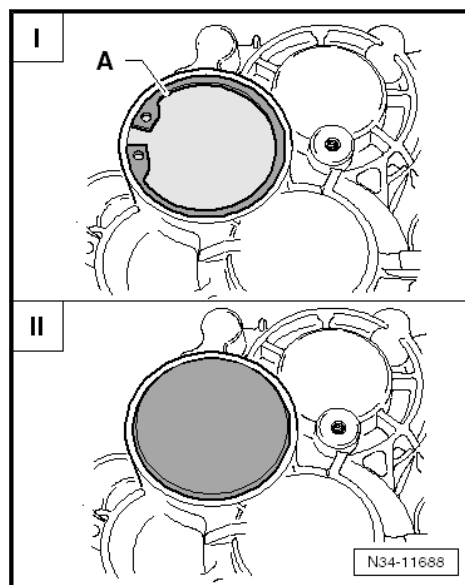
Note

Do not pull bevel box with mounting bolts against the transmission. Otherwise bevel box is canted and mounting eyelets can break off.

- Tighten the four bevel box connecting bolts -arrows- (only three shown in illustration) on the manual transmission.
- Tighten the bolt for the right flange shaft with the Socket Wrench for example Socket And Extended Bit -T10107 A-.

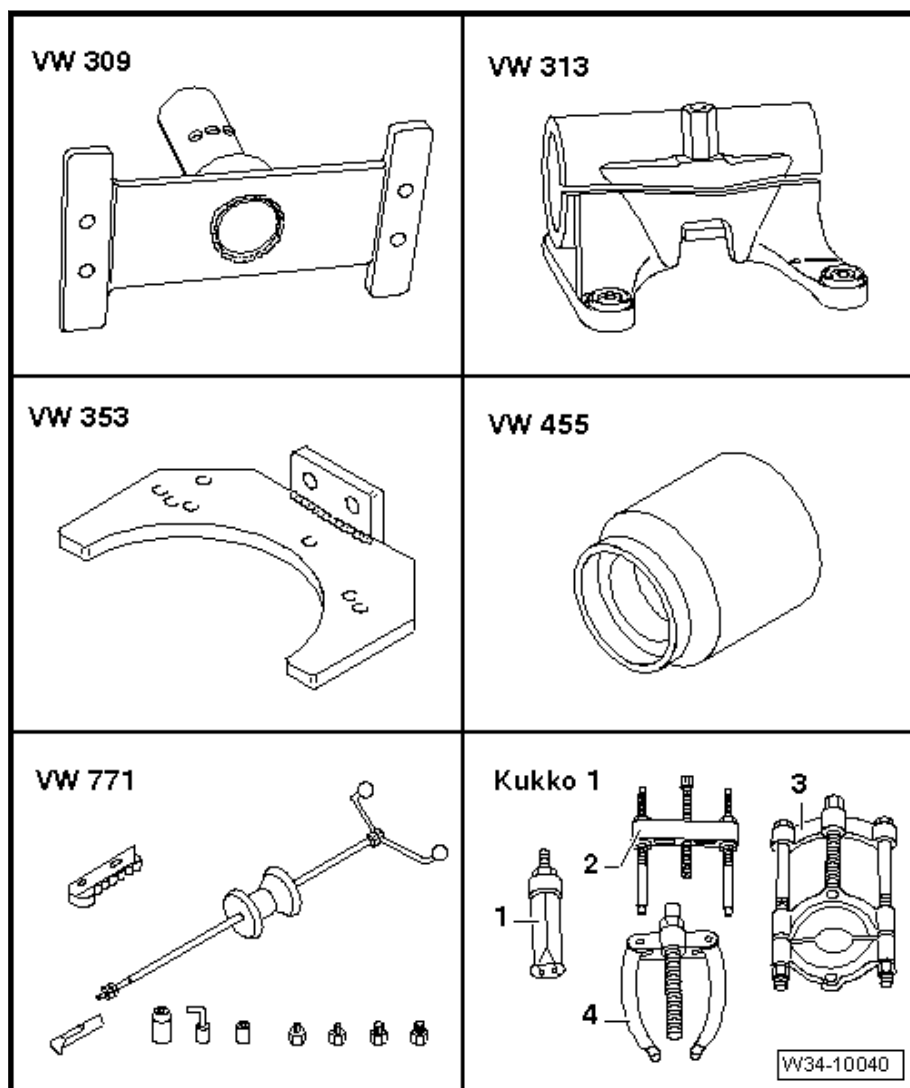
11.9 Assembly Sequence: I = Transmission »with« a Securing Ring -A- for Input Shaft Metal Cover; II = Transmission with Plastic Cover for Input Shaft

The plastic cap for the input shaft does not require the circlip -A-



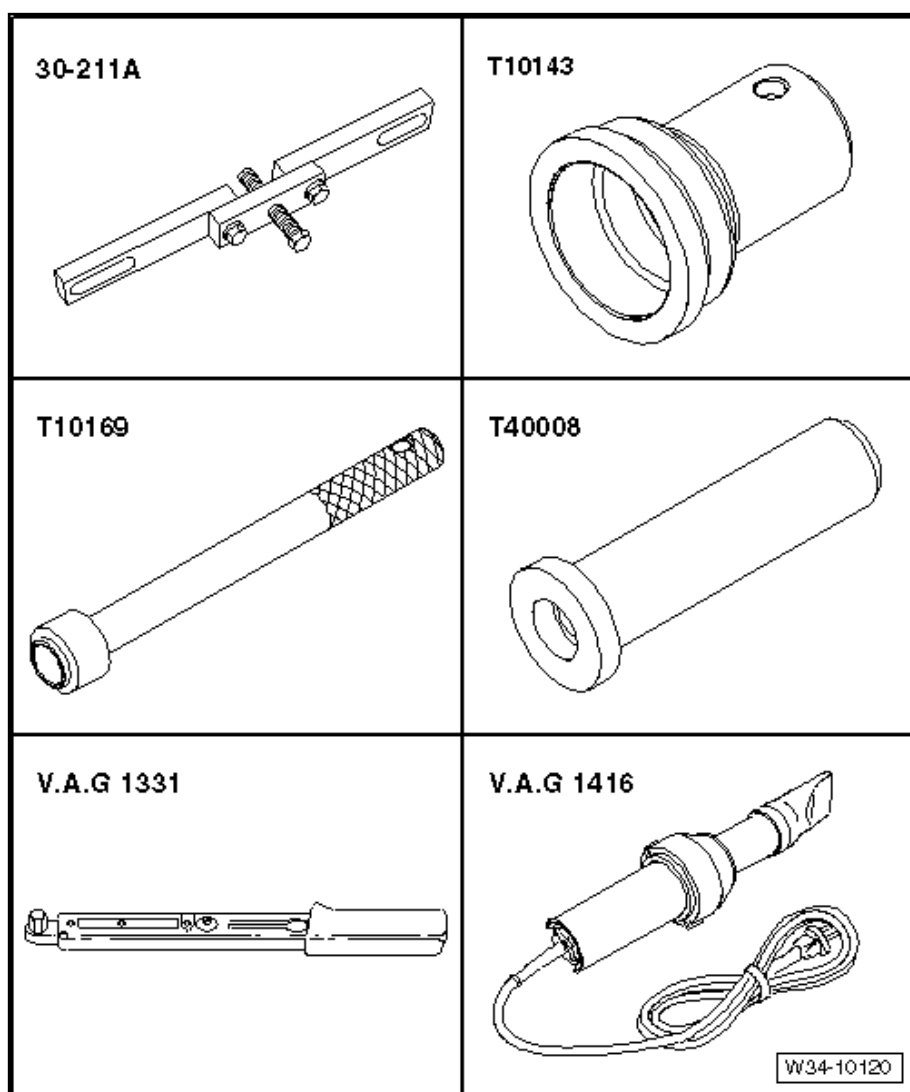
Transmission housing, shift mechanism, input shaft, output shafts, differential, selector rods and bevel box if necessary, removing and installing.

Special tools and workshop equipment required





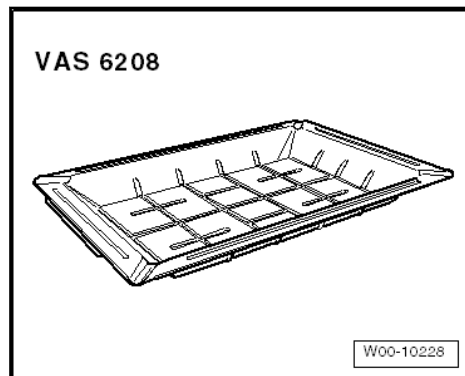
- ◆ Holding Plate -VW 309A-
- ◆ Holding Fixture -VW 313-
- ◆ Transmission Support -VW 353-
- ◆ Press Piece - Multiple Use -VW 455- or Press Piece - Front Wishbone -3160-
- ◆ Slide Hammer Set -VW 771-
- ◆ -1- Internal Puller -VAS 251 601-
- ◆ -3- Splitter -VAS 251407-
- ◆ -4- Counter Support -VAS 251621-



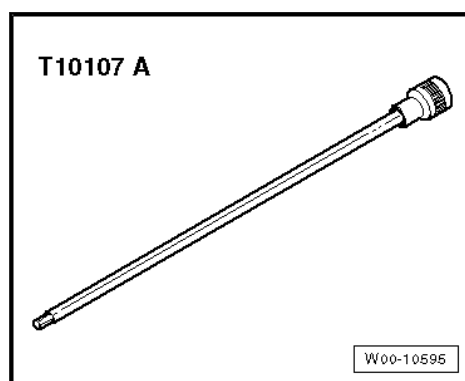
- ◆ Bracket - Multiple Use -30 - 211A-
- ◆ Seal Installer - Drive Flange -T10143- or Seal Installer - Output Shaft Oil Seal -T10180-
- ◆ Locking Sleeve Drift -T10169-
- ◆ or Locking Sleeve Drift -T10362-. Refer to ➤ [Fig. "Retaining Sleeve Differentiation", page 362](#) .
- ◆ Seal Installer - Driveshaft -T40008-



- ◆ Torque Wrench 1331 5-50Nm -V.A.G 1331-
- ◆ Wiring Harness Repair Set - Hot Air Blower -VAS 1978/14A-
- ◆ Shop Crane - Drip Tray -VAS 6208-



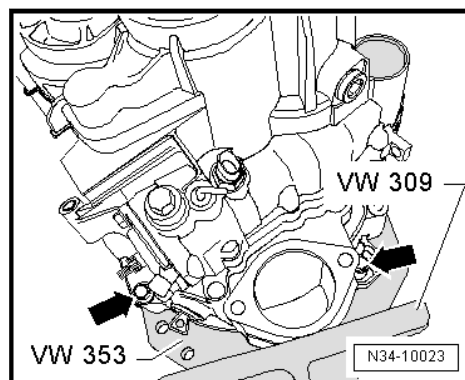
- ◆ Socket and Extended Bit -T10107 A-



- ◆ Sealing Compound -AMV 188 200 03-

11.9.1 Transmission, Disassembling

- Secure the transmission to the assembly stand with bolts -arrows-.



Note

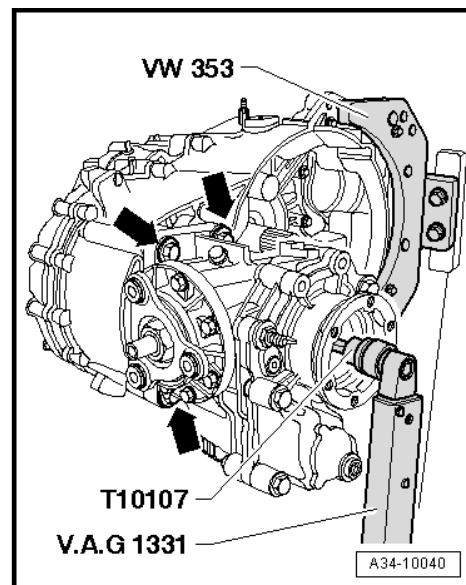
If one of the fastening holes does not touch the Transmission Support, place shims between the hole and the Transmission Support.

- Turn the transmission in the assembly stand so that the drain plug is facing down.
- Place the Drip Tray underneath.



- Drain the transmission fluid from the manual transmission.

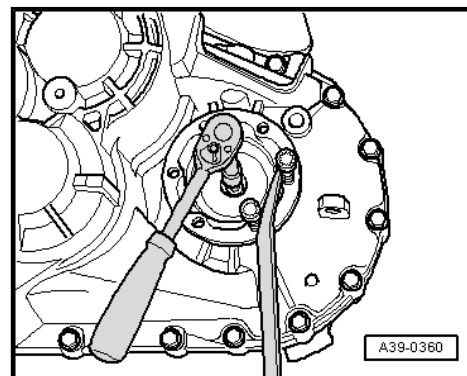
AWD Transmission



- Remove the bolt for the right flange shaft with the Socket Wrench for example Socket And Extended Bit -T10107 A-.
- Remove the four bolts -arrows- (only three bolts are shown) that attach the bevel box to the manual transmission.
- Carefully press bevel box off the manual transmission while protecting it against falling.

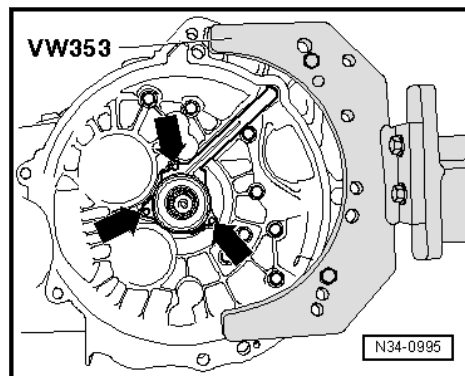
FWD Transmission

- Remove the right flange shaft (the illustration shows the left flange shaft).

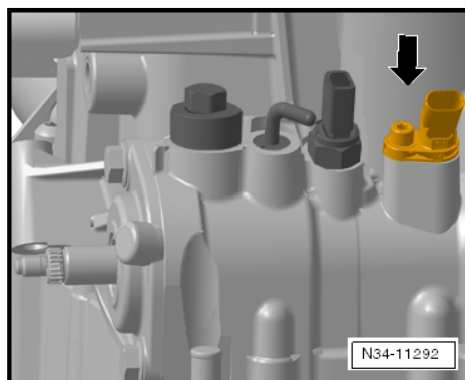


Continuation for All

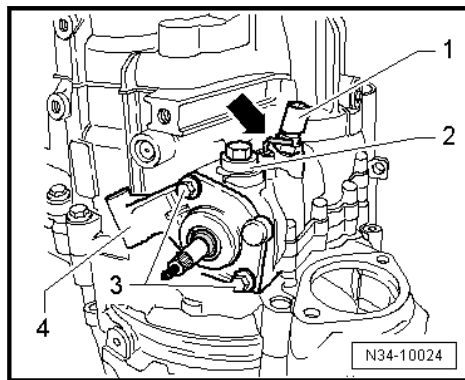
- Remove the clutch slave cylinder with the release bearing -arrows-.



- Transmission on vehicles with Start/Stop System: remove the Transmission Neutral Position Sensor -G701- -arrow-.



Make sure in the following step, that the gearshift shaft is not blocked by the lock elbow -arrow-.

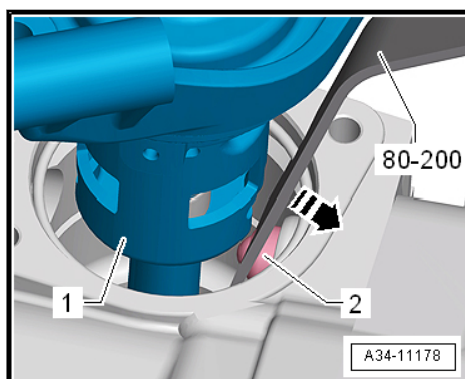


- Move the gearshift shaft into neutral.
- Remove the Back-Up Lamp Switch -F4- -1-.
- Remove the locking bolt -2-.
- Then remove the bolts -3-.
- Remove selector shaft with shift cover -4- from transmission housing.

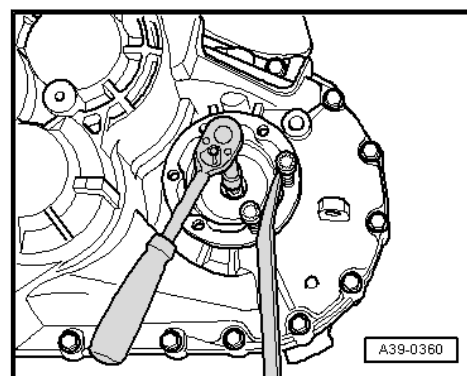


Note

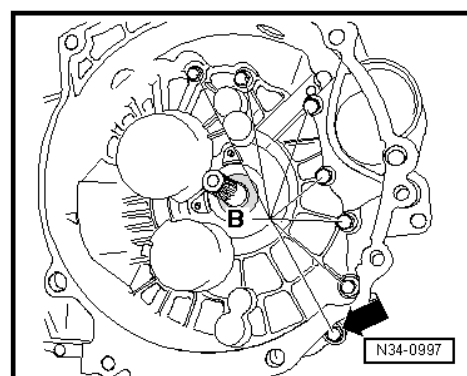
Use the Pry Lever -80 - 200- to press against the spring force of the locking bushing in the -direction of the arrow- so that the gearshift shaft -1- does not touch the locking bushing -2- during removal.



- Remove the left flange shaft bolt. To do this, install two bolts into the flange and counterhold the flange using a pry bar.



- Remove the left flange shafts and pressure spring.
- Remove the bolts -B- that connect the clutch housing to the transmission housing.



Note

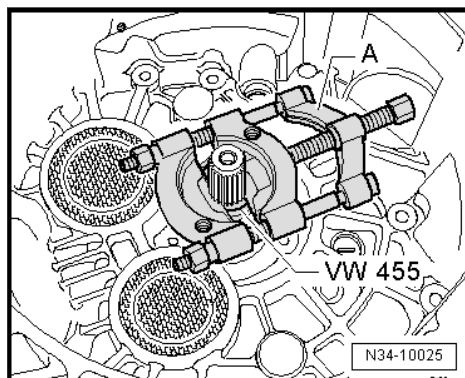
One bolt -arrow- is located on the outside of the bolting flange.

- Secure the input shaft as follows:

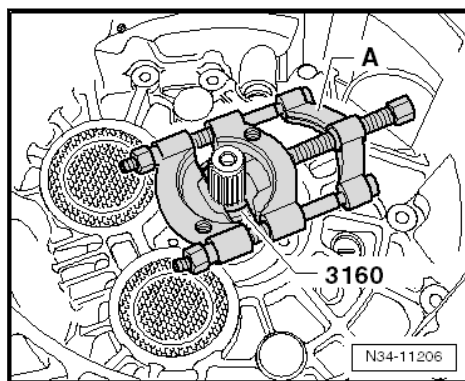


The stub shaft splines on the input shaft has different lengths on the transmission.

- Either place the Press Piece - Multiple Use -VW 455- over the input shaft on the clutch housing.



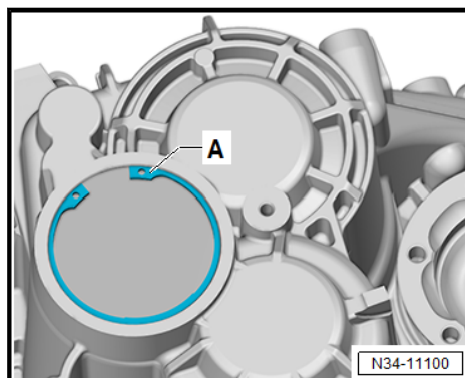
- Or place the Press Piece - Front Wishbone -3160- over the input shaft on the clutch housing.



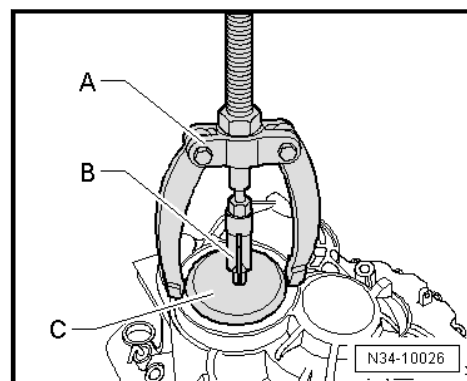
- Tension the Splitter -A- (for example, Splitter -VAS251407-) tightly behind the input shaft splines.

The rear side of the Splitter must touch the Press Piece - Multiple Use -VW 455- or the Press Piece - Front Wishbone -3160- without any play.

Metal Cap



- Remove the circlip -A- for the cap/input shaft.
- Pierce the rubber piece in the center of the cap -C- with a Screwdriver.

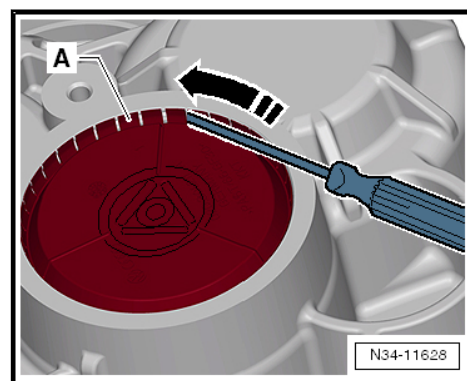


- Remove the cap from the transmission housing.

A - Counter Support, for example -VAS 251 621-

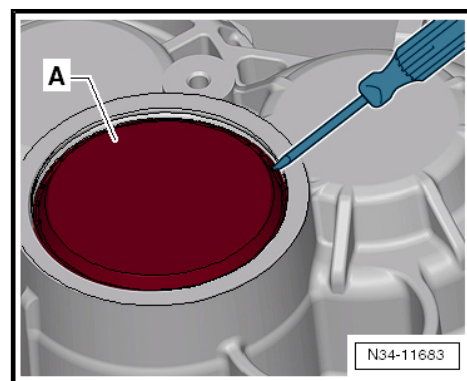
B - Internal Puller 8 to 12 mm, for example Internal Puller -VAS 251603-

Plastic Cap



Carefully release all tabs -A-. Do not damage the transmission housing when doing so.

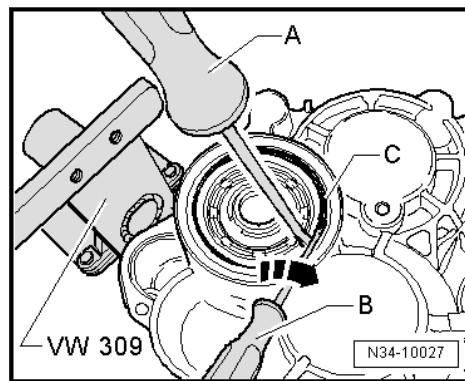
- Pry out the cap.



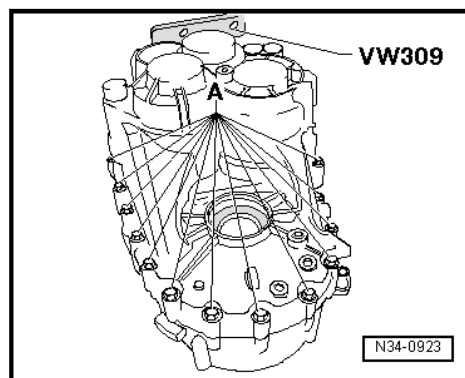
- If necessary, make sure that the individual cap parts are removed.

Continuation for All

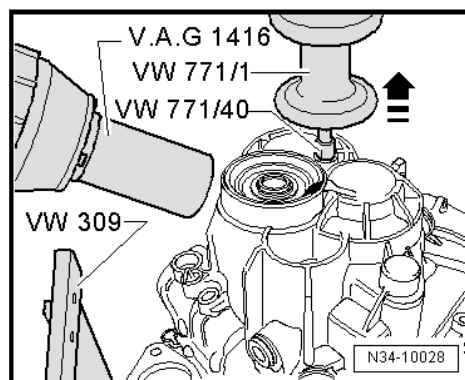
Remove the circlip -C- as follows from the grooved ball bearing for the input shaft/transmission housing:



- Hold one end of the locking ring secure using the Screwdriver -A-.
- Pry the other end out of the groove in the grooved ball bearing in -direction of the arrow- using the Screwdriver -B-.
- Pry out the rest of the locking ring using the Screwdriver -B-.
- Remove the transmission housing bolts -A- from the clutch housing.



- Install adapter VW 771/40 into the threaded hole in the transmission housing.



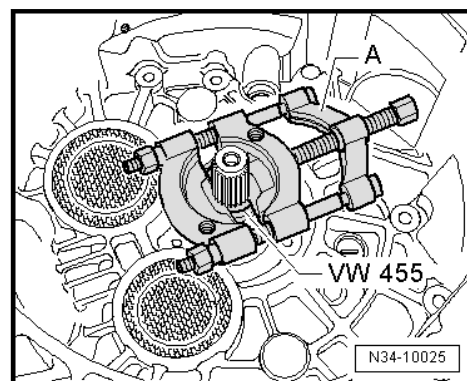
- Heat the transmission housing in the area near the bearing seat for the grooved ball bearing/input shaft to approximately 100 °C for approximately 10 minutes using a Hot Air Blower, for example, -V.A.G 1416-.
- Remove the transmission housing from the clutch housing in the -direction of the arrow- using the Sliding Hammer VW 771/1.



Note

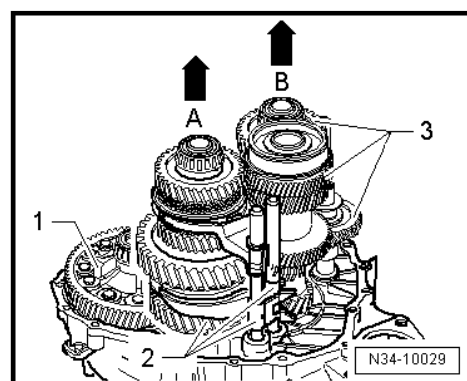
If necessary, carefully use the pry lever to pry up all around at the protruding housing ridges while alternating between sides. Do not damage the sealing surfaces while doing so.

- Remove the Separating Tool -A- and the Press Piece - Multiple Use VW 455 or the Press Piece - Front Wishbone -3160- from the input shaft.



A second technician is needed to help remove the shafts from the clutch housing.

- Lift the differential -1- with the left hand. With the right hand, lift the output shaft for 1st to 4th gear together with the gearshift rods -2- -arrow A-.



- At the same time, the second technician lifts the input, reverse and output shaft for 5th/6th gear and reverse gear -3- together with the selector rods out of the clutch housing -arrow B-



Note

If necessary, the differential can be placed back in the clutch housing again after lifting the shafts.

- Remove the input shaft seal.



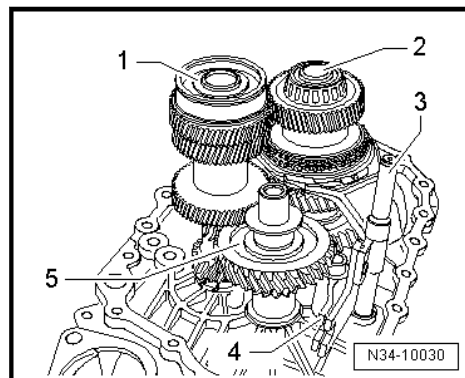
Note

Always replace the grooved ball bearing on the input shaft -Item 6- ➔ [Item 6 \(page 384\)](#).



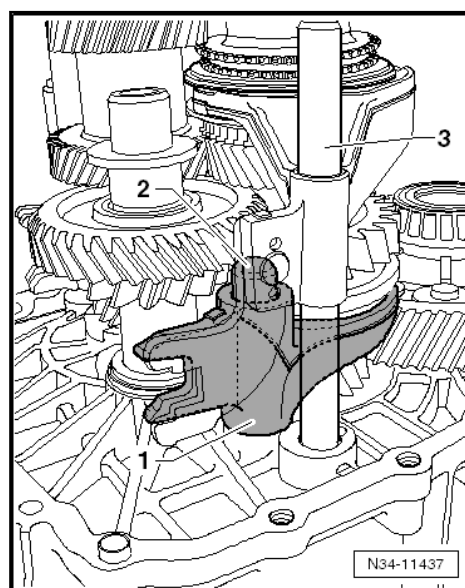
11.9.2 Transmission, Assembling

- A new grooved ball bearing is pressed onto the input shaft -Item 6- ➔ [Item 6 \(page 384\)](#) .
- Install the input shaft -1-, the 5th/6th gear and reverse gear output shaft -2-, the gearshift rod -3-, the reverse gear shift fork -4- and reverse shaft -5-.

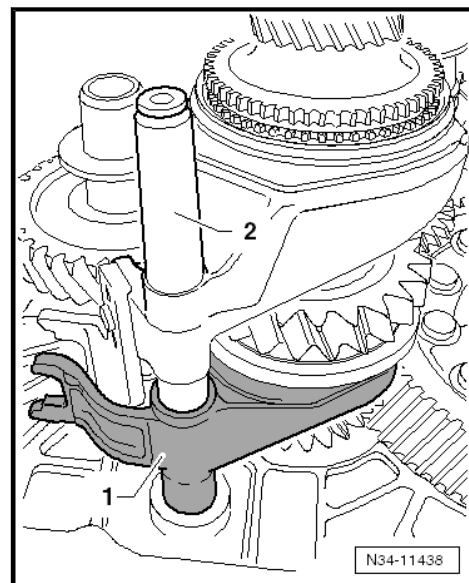


Pay attention to the different bearing for the reverse gear shift fork.

The reverse gear shift fork -1- is mounted on the shaft -2- behind the 5th and 6th gear shift rod -3-.

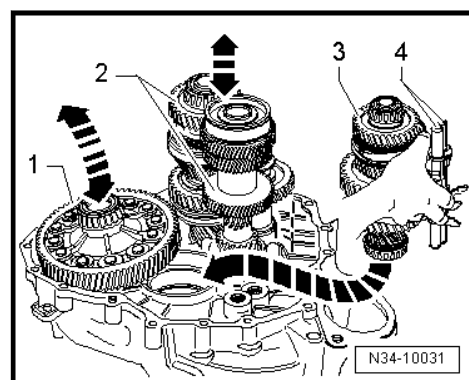


The reverse gear shift fork -1- is mounted on the gearshift rod with the 5th and 6th gear shift fork -2-.



Continuation for All

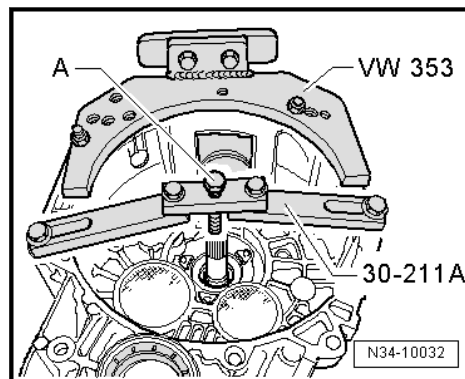
- Then install the differential -1-.



Note

A second technician is needed to help continue installing the shafts in the clutch housing.

- Hold the 1st to 4th gear output shaft -3- with the shift rods -4- in the right hand as shown.
- Slightly lift the differential with the left hand.
- Have the second technician lift the input shaft, the 5th/6th gear output shaft and reverse gear -2- together with the reverse shaft slightly at the same time.
- Install the 1st to 4th gear output shaft in the -direction of the arrow-.
- The splines of the input shaft, output shafts and final drive wheel gear/differential must engage.
- Together with a second technician, position the shafts and the differential in their bearing seats.
- Secure the Bracket - Multiple Use -30-211A- for the input shaft on the clutch housing.

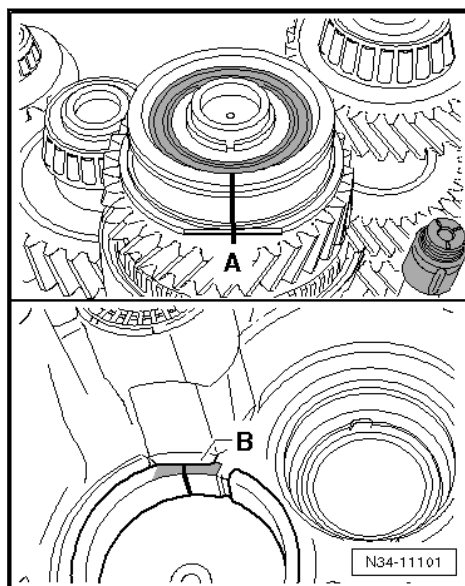


Note

The clutch housing is shown in the illustration rotated 180°.

- Install the bolt -A- just until the input shaft starts to lift.

The grooved ball bearing/input shaft only fits one way into the transmission housing



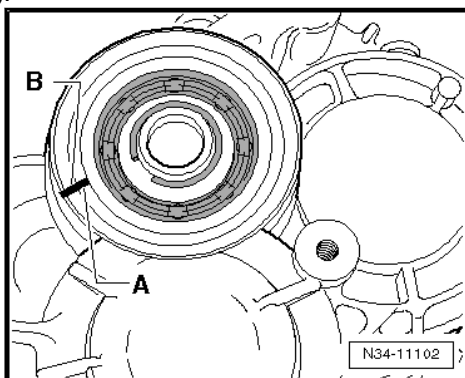
There is a flat area on the grooved ball bearing and on the grooved ball bearing mount.

- If the flat areas -A- and -B- are present, do not insert any washers above and below the grooved ball bearing. Refer to [⇒ B1.2.1 all Bearing Changes", page 391](#).
- The flattened sides -A- on the grooved ball bearing and on the bearing mount -B- must align in the transmission housing.
- Mark the flat side with color.
- Transfer the markings to the upper area of the grooved ball bearing and to the upper area of the transmission housing bearing mount (⇒ next illustration).
- Heat the transmission housing in the area near the bearing seat for the grooved ball bearing/input shaft to approximately 100 °C for approximately 10 minutes using a -Hot Air Blower-, for example, -V.A.G 1416-.

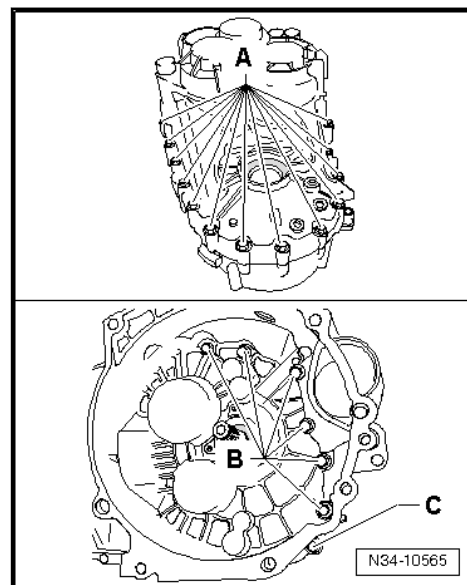


Note

- ◆ *It is necessary to heat the transmission housing so that the grooved ball bearing is not damaged when the housing is being installed.*
- ◆ *Evenly apply the Sealing Compound -AMV 188 200 03- to the sealing surface of the clutch housing.*
- ◆ *Align the marking on the grooved ball bearing -A- with the marking on the transmission housing -B- and mount the transmission housing.*



- Install the transmission housing and tighten the new bolts -A-, -B- and -C- to the tightening specification.



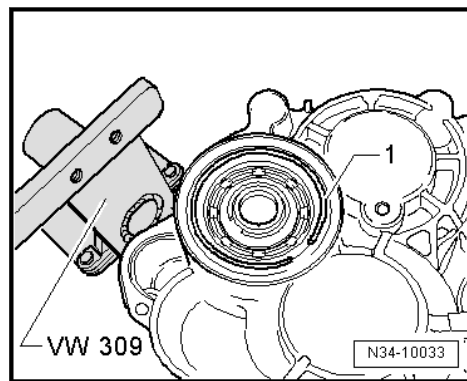
For replacement steel bolts (outer hex head), pay attention to the allocation:

A - Bolt with attached washer

B - Bolt without washer

C - Bolt with attached washer

- Install the grooved ball bearing/input shaft circlip -1-.

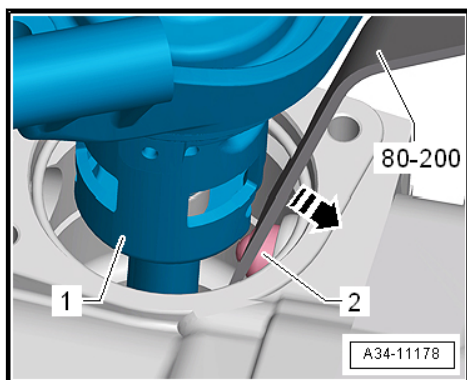


- Remove the Bracket - Multiple Use -30 - 211 A- for the input shaft.
- If the retaining sleeve for the gearshift shaft was removed, install it now all the way up to the tool. Refer to ➤ [Fig. “Retaining Sleeve Differentiation”](#), page 362 .
- Turn the transmission so that the gearshift shaft opening faces upward in the assembly stand.

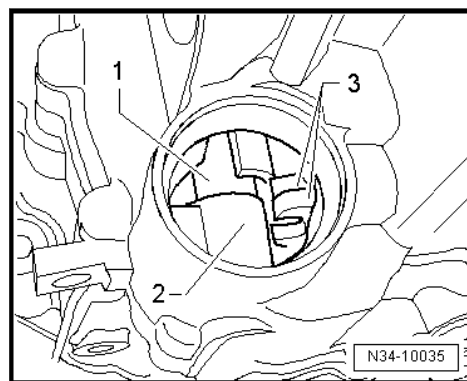


Note

Use the Pry Lever -80 - 200- to press against the spring force of the locking bushing in the -direction of the arrow- so that the gearshift shaft -1- does not touch the locking bushing -2- during installation.



- Insert the gearshift shaft -1- into the lower bearing -2- and into the shift forks -3-.

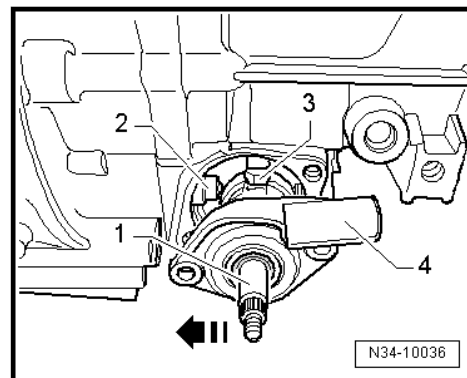




Note

For clarity, the cap -Item 2- ➔ [Item 2 \(page 358\)](#) is removed.

- Push the gearshift shaft -1- against the retaining sleeve -2- in the -direction of the arrow- and use the shift finger -3- to guide it all the way downward through the shift forks.



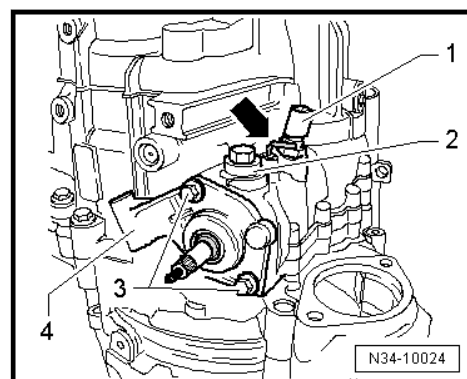
- The gearshift cover -4- must be parallel to the bolting surface on the transmission housing while doing so.
- It must be possible to move the gearshift shaft easily (forward and backward).



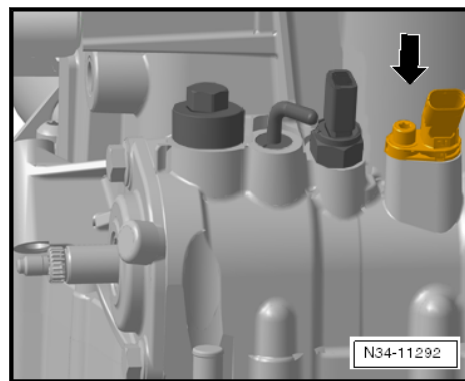
Note

If the gearshift cover is at an angle to the bolting surface, then the gearshift shaft was not inserted into the lower bearing.

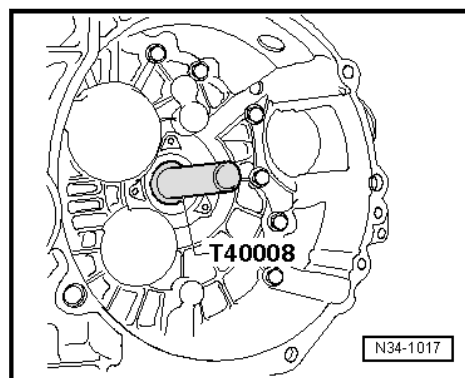
- Tighten the bolts -3- for the gearshift cover -4-.



- Install the locking bolt -2-; the locking elbow -arrow- must not be installed when doing so.
- Install the Back-Up Lamp Switch -F4- -1-.
- Transmission on vehicles with Start/Stop System: install the Transmission Neutral Position Sensor -G701- -arrow- and tighten the screw to 6 Nm.

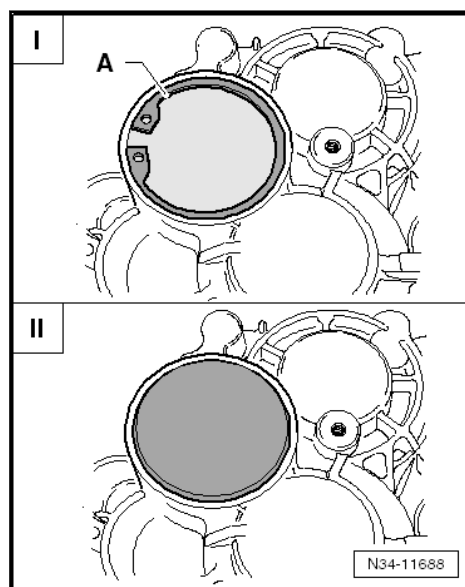


- Install the input shaft seal so that it is flush.



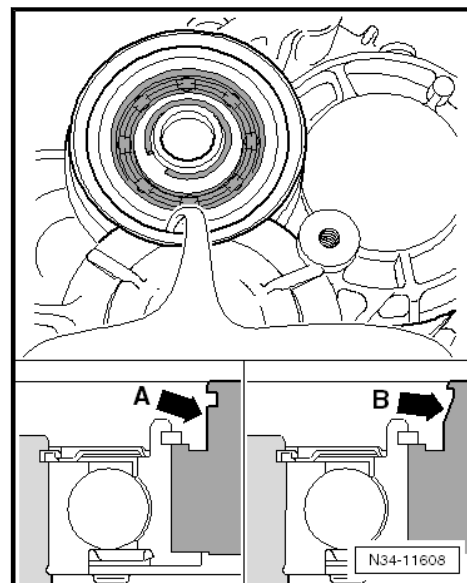
- Install the clutch slave cylinder with release bearing. Refer to [⇒ R3 release Mechanism, Servicing”, page 57](#) .
- Move through all the gears.
- Install the cover as follows:

Cap Differentiation



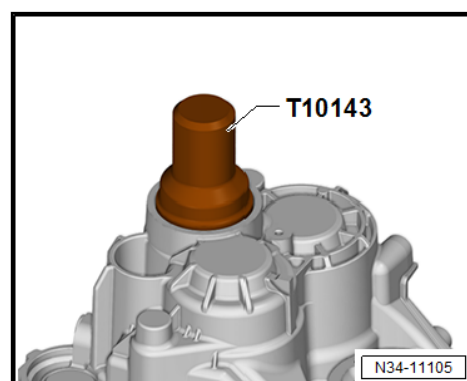
- I- = Metal cap; secured with a circlip -A-.
- II- = Plastic cap; no circlip.

Allocation

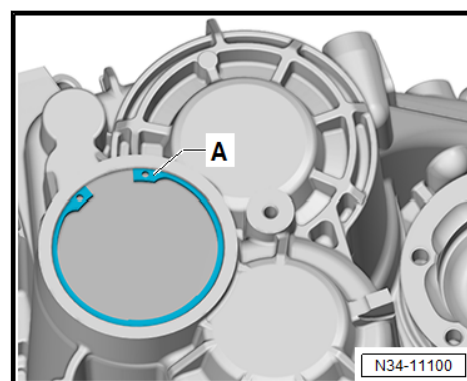


Mounting area for the cap	Cap	Installation
-Arrow A- = vertical	Metal	⇒ Fig. “Metal Cap” , page 351
-Arrow B- = at an angle	Plastic	⇒ Fig. “Plastic Cap” , page 351

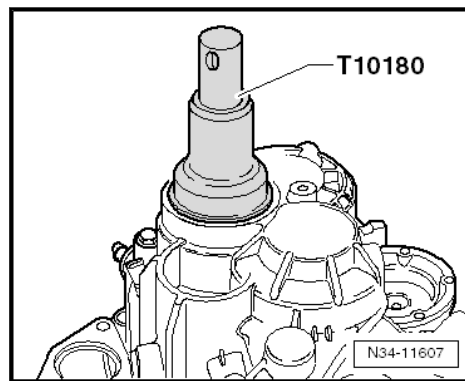
Metal Cap



- Install the cap all the way into the transmission housing.
- Secure the cap with the circlip -A-.



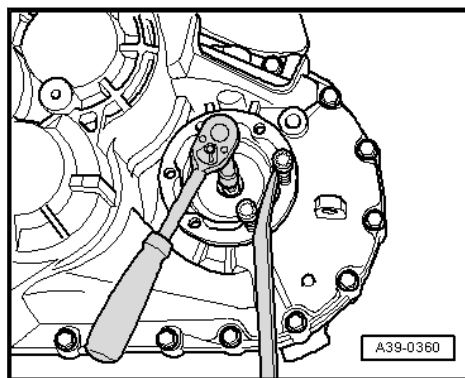
Plastic Cap



- Install the cap all the way into the transmission housing.

Continuation for All

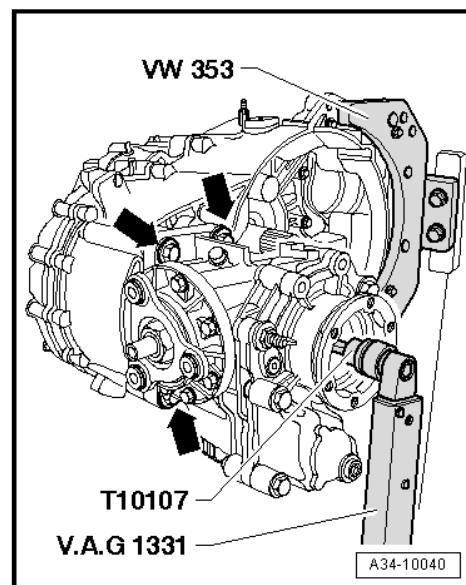
- Always pay attention to the cap allocation. Refer to ➤ [Fig. "Allocation", page 350](#).
- If installed incorrectly, there will be leaks.
- Allocate the cap. Refer to the ➤ Electronic Parts Catalog (ETKA).
- Install the left flange shaft and pressure spring, the thrust washer and the tapered ring.



FWD Transmission

- Install the right flange shaft and pressure spring, the thrust washer and the tapered ring.

AWD Transmission



Attach the bevel box to the manual transmission as follows:

- For a manual transmission, lubricate the differential splines with Lubricating Grease for Clutch Plate Splines - G 000 100-.
- Slide on bevel box completely on manual transmission, while doing this, join drive axle/bevel box splines centrally with the differential.
- Align the right flange shaft splines with the differential bevel gear. Turn the flange shaft if necessary.
- With proper tooth position and central guiding, bevel box slides up to stop against manual transmission.



Note

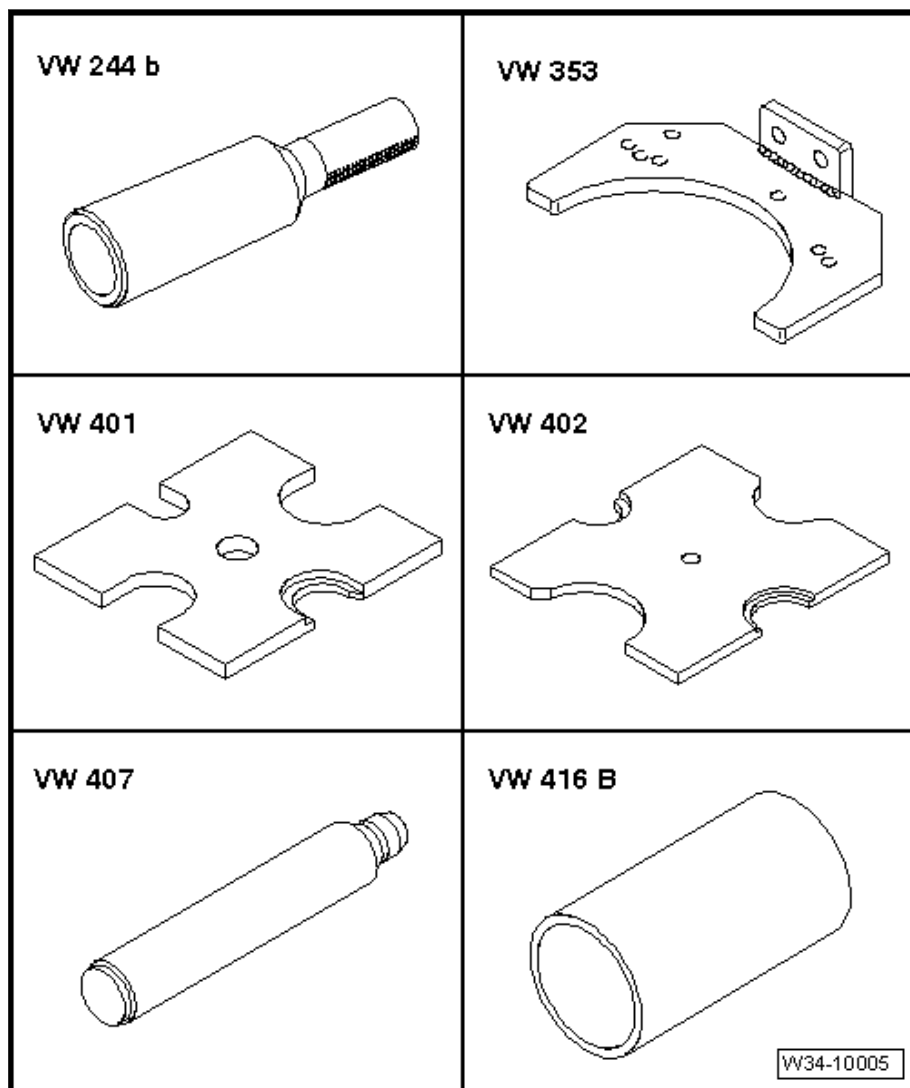
Do not pull bevel box with mounting bolts against the transmission. Otherwise bevel box is canted and mounting eyelets can break off.

- Tighten the four bevel box connecting bolts -arrows- (only three shown in illustration) on the manual transmission.
- Tighten the bolt for the right flange shaft with the Socket Wrench for example Socket And Extended Bit -T10107 A-.

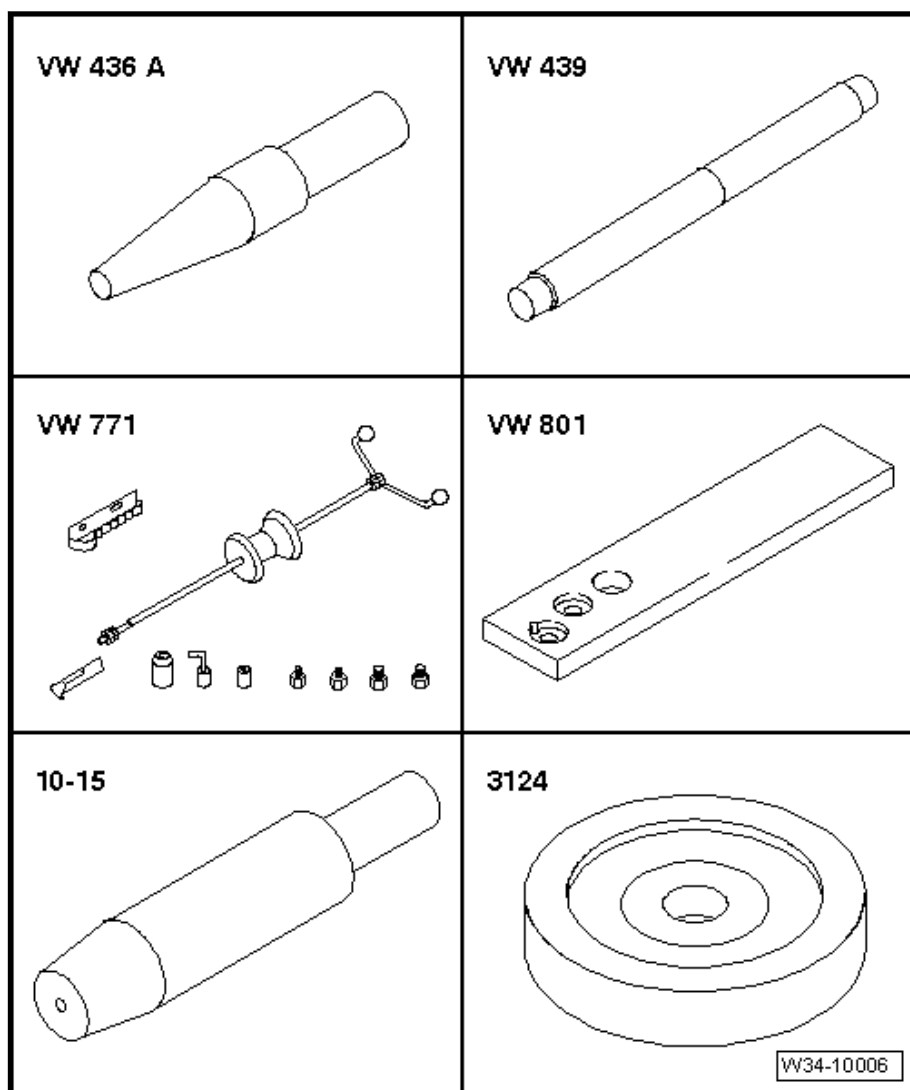


12 Transmission Housing, Servicing

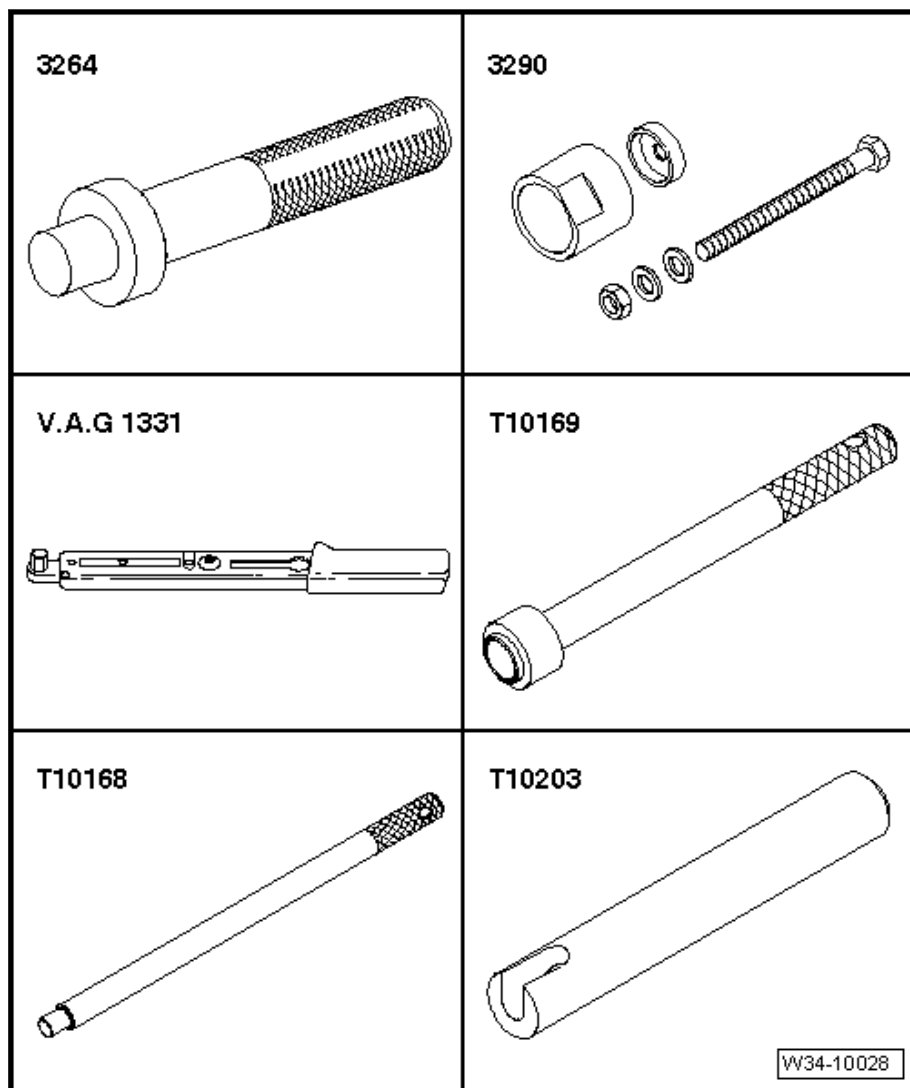
Special tools and workshop
equipment required



- ◆ Bearing Driver - Multiple Use -VW 244 B-
- ◆ Transmission Support -VW 353-
- ◆ Press Plate -VW 401-
- ◆ Press Plate -VW 402-
- ◆ Press Piece - Rod -VW 407-
- ◆ Press Piece - 37mm -VW 416 B-



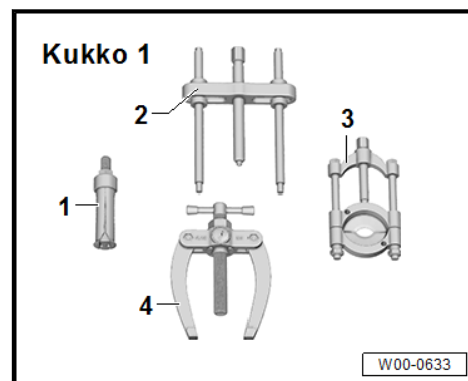
- ◆ Guide Pin -VW 436A-
- ◆ Press Piece - Guide Pin -VW 439-
- ◆ Slide Hammer Set -VW 771-
- ◆ Crankshaft Holding Fixture -VW 801-
- ◆ Guide Pin -10-15-
- ◆ Press Piece - Pivot Mount Bushing -3124-



- ◆ Bearing Installer - Crankshaft Pilot Bearing -3264-
- ◆ Subframe Support Tool -3290-
- ◆ Torque Wrench 1331 5-50Nm -V.A.G 1331-
- ◆ Bushing Driver - Selector Shaft -T10168-
- ◆ Locking Sleeve Drift -T10169- or Locking Sleeve Drift - T10362-. Refer to ➤ [Fig. ""Retaining Sleeve Differentiation""](#), [page 362](#) .
- ◆ Breather Tube Tool -T10203-



- ◆ -1- Internal Puller -VAS251605-



- ◆ -1- Internal Puller (Kukko 21-4) -VAS251609-
- ◆ -4- Counter Support -VAS 251 623-
- ◆ Thread adapter from Counter Support -VAS 251621-

1 - Transmission Housing

- ❑ When replacing, adjust the output shafts and differential. Refer to ➤ [O4 overview", page 494](#).
- ❑ Changes near the grooved ball bearing/input shaft mount
-Item 3- ➤ [Item 3 \(page 384\)](#)
- ❑ Changes near the cap/input shaft mount
-Item 4- ➤ [Item 4 \(page 307\)](#)
- ❑ For components, refer to the ➤ [Electronic Parts Catalog \(ETKA\)](#).

2 - Cap

- ❑ Removing. Refer to ➤ [Fig. "Cap -A-, Removing", page 359](#).
- ❑ Installing. Refer to ➤ [Fig. "Install the cap until it stops.", page 360](#).

3 - Fluid Drain Plug

- ❑ Tightening Specification. Refer to ➤ [Fig. "Different Versions of Fluid Fill or Drain Plug", page 256](#).

4 - Seal

- ❑ If equipped, replace after removing

5 - Fluid Filler Plug

- ❑ Tightening Specification. Refer to ➤ [Fig. "Different Versions of Fluid Fill or Drain Plug", page 256](#).

6 - Locking Elbow

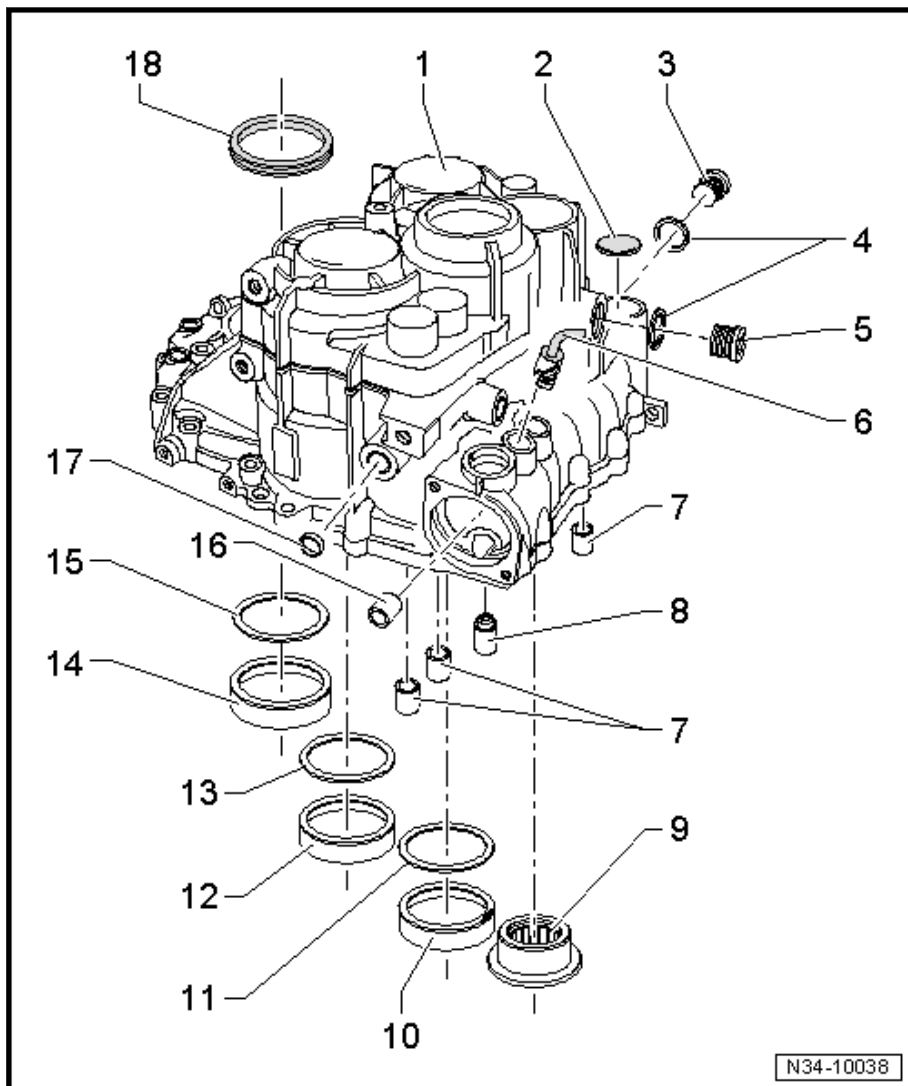
- ❑ To adjust the shift mechanism, refer to ➤ [M1.11 echanism, Adjusting", page 121](#).
- ❑ Can be replaced with the transmission assembled
- ❑ Removing. Refer to ➤ [Fig. "Gearshift Shaft Locking Elbow, Removing", page 360](#).
- ❑ Installation position. Refer to ➤ [Fig. "Locking Elbow Installation Position", page 360](#).
- ❑ Installing. Refer to ➤ [Fig. "Install the gearshift shaft locking elbow -arrow- all the way up to the tool", page 361](#).

7 - Bearing Bushing

- ❑ For the shift rods
- ❑ Removing. Refer to ➤ [Fig. "Shift Rod Bearing Bushing, Removing", page 361](#).
- ❑ Installing. Refer to ➤ [Fig. "Install the gearshift rod bearing bushing all the way up to the tool", page 362](#).

8 - Retaining Sleeve

- ❑ To remove when the transmission is disassembled, refer to ➤ [Fig. "Remove the retaining sleeve -A- from the transmission housing", page 362](#).
- ❑ To remove when the transmission is not disassembled, refer to ➤ [Fig. "Use the Guide Pin -10-15- to remove the retaining sleeve with the transmission assembled", page 362](#).
- ❑ There are different retaining sleeves. Refer to ➤ [Fig. "Retaining Sleeve Differentiation", page 362](#).
- ❑ Installing a retaining sleeve with a shoulder. Refer to ➤ [Fig. "Drive in lock sleeve with shoulder as far as stop on tool", page 363](#).





- ☐ Installing the retaining sleeve without a shoulder. Refer to ➤ [Fig. ““Drive in lock sleeve without shoulder as far as stop on tool””, page 363](#) .

9 - Needle Sleeve

- ☐ For the reverse shaft
- ☐ Replace each time it is removed
- ☐ Removing. Refer to ➤ [Fig. ““Remove the reverse shaft needle sleeve from the transmission housing””, page 363](#) .
- ☐ Installing. Refer to ➤ [Fig. ““Needle Sleeve -A-, Installing in Transmission Housing””, page 364](#) .

10 - Outer Race/Tapered Roller Bearing

- ☐ For 5th/6th and reverse gear output shaft
- ☐ Removing and Installing. Refer to ➤ [-3.1 Input Shaft, 5th/6th and Reverse Gears”, page 434](#) .
- ☐ When replacing: adjust output shaft for 5th/6th and reverse gear. Refer to ➤ [a3.3 nd Reverse Gear Output Shaft, Adjusting”, page 448](#) .

11 - Shim

- ☐ For 5th/6th and reverse gear output shaft
- ☐ Adjustment Overview. Refer to ➤ [O4 erview”, page 494](#) .

12 - Outer Race/Tapered Roller Bearing

- ☐ For 1st to 4th gear output shaft
- ☐ Removing and Installing. Refer to ➤ [t2.2 o 4th Gear Output Shaft, Disassembling and Assembling”, page 396](#) .
- ☐ When replacing, adjust the 1st to 4th gear output shaft. Refer to ➤ [t2.3 hrough 4th Gear Output Shaft, Adjusting”, page 428](#) .

13 - Shim

- ☐ For 1st to 4th gear output shaft
- ☐ Adjustment Overview. Refer to ➤ [O4 erview”, page 494](#) .

14 - Outer Race/Tapered Roller Bearing

- ☐ For the differential
- ☐ Removing and Installing, FWD. Refer to ➤ [D5.1 isassembling and Assembling, FWD”, page 495](#) .
- ☐ Removing and Installing, AWD. Refer to ➤ [D5.2 isassembling and Assembling, AWD”, page 503](#) .
- ☐ When replacing, adjust the differential. Refer to ➤ [A5.3 djusting”, page 513](#) .

15 - Shim

- ☐ For the differential
- ☐ Adjustment Overview. Refer to ➤ [O4 erview”, page 494](#) .

16 - Bearing Bushing

- ☐ For the gearshift shaft
- ☐ Removing. Refer to ➤ [Fig. ““Gearshift Shaft Bearing Bushing, Removing””, page 364](#) .
- ☐ Installing. Refer to ➤ [Fig. ““Install the gearshift shaft bearing bushing -A- all the way up to the tool””, page 365](#) .

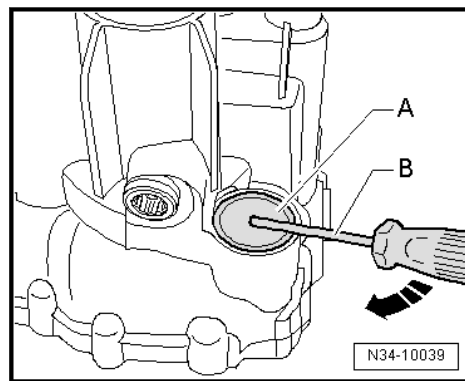
17 - Plugs

- ☐ Removing. Refer to ➤ [Fig. ““Plug -1-, Removing””, page 365](#) .
- ☐ Installing. Refer to ➤ [Fig. ““Plug -1-, Installing””, page 365](#) .

18 - Seal

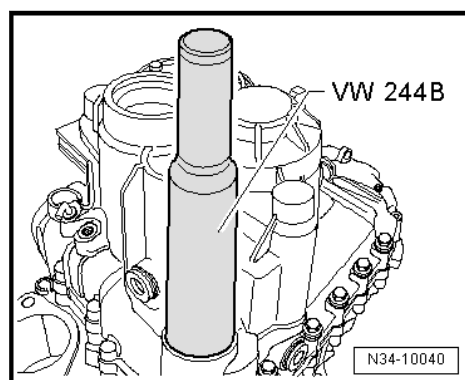
- ☐ For the left flange shaft
- ☐ Replacing, FWD. Refer to ➤ [F1.1 lange Shaft Seal, Replacing”, page 455](#) .
- ☐ Replacing, AWD. Refer to ➤ [F1.1 lange Shaft Seal, Replacing”, page 455](#) .

Cap -A-, Removing

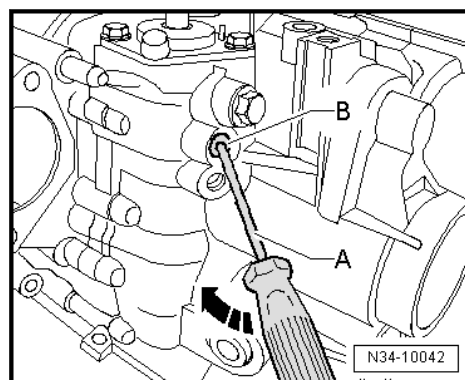


- Pierce the rubber piece in the center of the cap with a screwdriver -B- and pry out the cap in the -direction of the arrow-.

Install the cap until it stops.

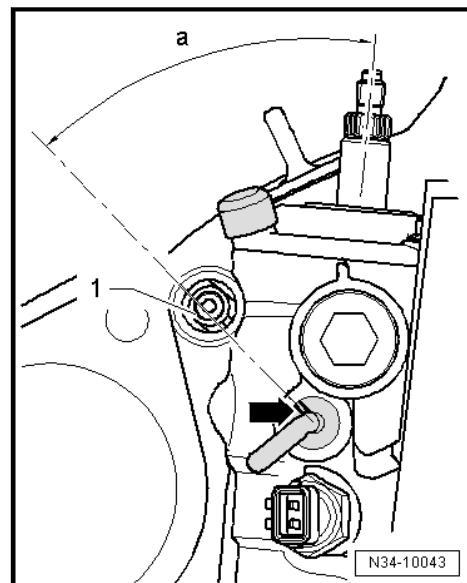


Gearshift Shaft Locking Elbow, Removing



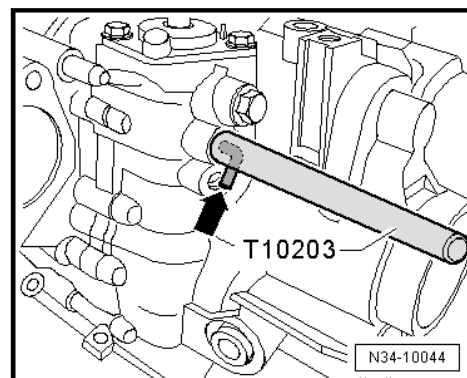
- Remove the bracket in its unlocked position.
- Guide a screwdriver -A- into hole of lock elbow -B-.
- Pry out the locking elbow in the -direction of the arrow-.

Locking Elbow Installation Position



- The mark on the locking elbow -arrow- must point toward the connection on the clutch slave cylinder -1-.
- Dimension -a- must be approximately 45°.

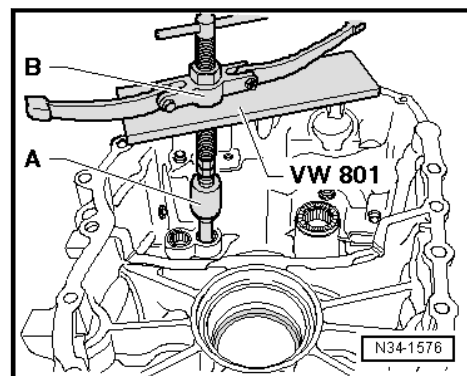
Install the gearshift shaft locking elbow -arrow- all the way up to the tool



Note

The locking elbow must be unlocked when being installed.

Shift Rod Bearing Bushing, Removing

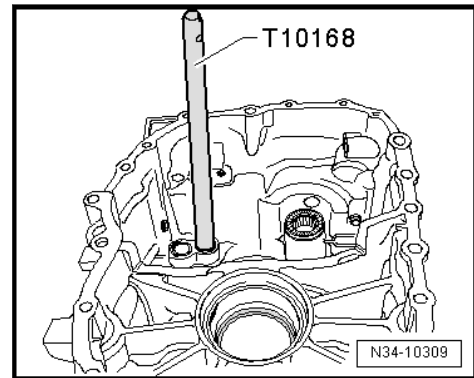




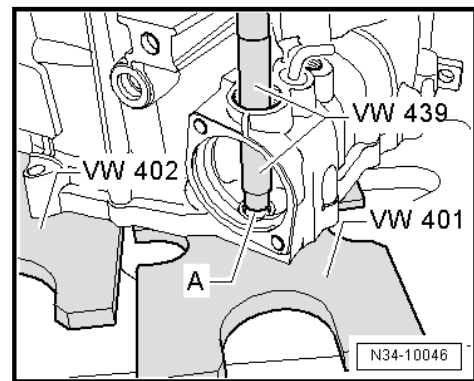
A - 14.5 to 18.5 mm Internal Puller, for example Puller - Kukko
Internal - 14-19mm -Kukko 21/2-

B - Counter Support, for example, Counter Support -
VAS251623-

**Install the gearshift rod bearing bushing all the way up to the
tool**

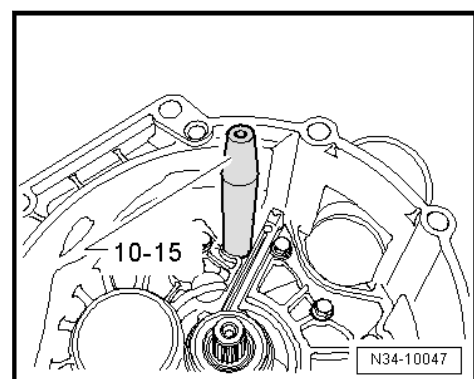


Remove the retaining sleeve -A- from the transmission housing



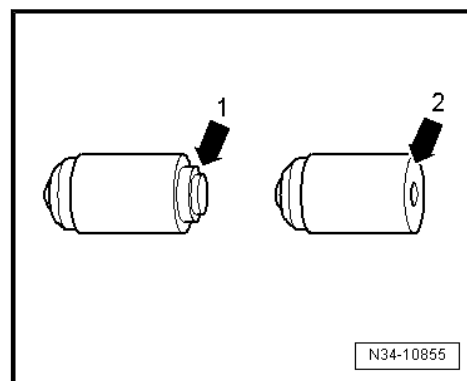
- Place the transmission housing on the Press Plate -VW 401- and Press Plate -VW 402- so that the alignment sleeves in the transmission housing do not get damaged.

**Use the Guide Pin -10-15- to remove the retaining sleeve with
the transmission assembled**



- Locking bolt and gearshift shaft removed.
- Turn the transmission so that the retaining sleeve cannot fall into the transmission.

Retaining Sleeve Differentiation



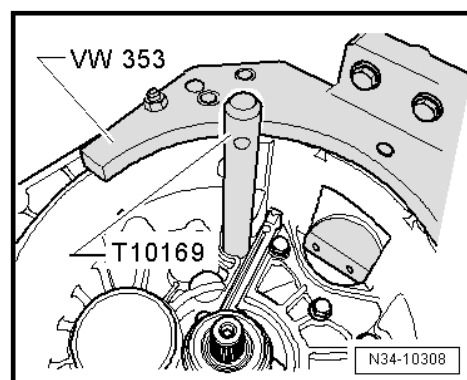
The following retaining sleeves may be installed:

Lock sleeve with a shoulder -arrow 1-. Refer to ➤ Fig. [“Drive in lock sleeve with shoulder as far as stop on tool”](#), page 363 .

Lock sleeve without a shoulder -arrow 2-. Refer to ➤ Fig. [“Drive in lock sleeve without shoulder as far as stop on tool”](#), page 363 .

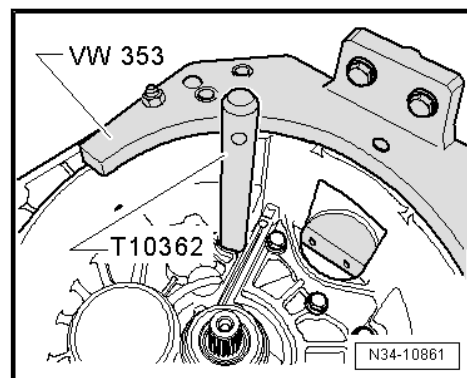
Allocate the components using the ➤ Electronic Parts Catalog (ETKA).

Drive in lock sleeve with shoulder as far as stop on tool



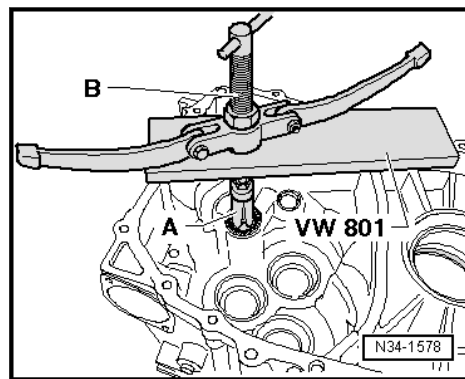
- The transmission housing is bolted to the clutch housing.

Drive in lock sleeve without shoulder as far as stop on tool



- The transmission housing is bolted to the clutch housing.

Remove the reverse shaft needle sleeve from the transmission housing



A - 23.5 - 30 mm Internal Puller, for example Internal Puller (Kukko 21-4) -VAS251609-

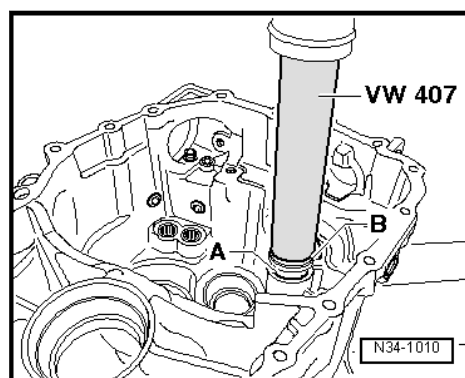
B - Counter Support, for example, Counter Support - VAS251623-



Note

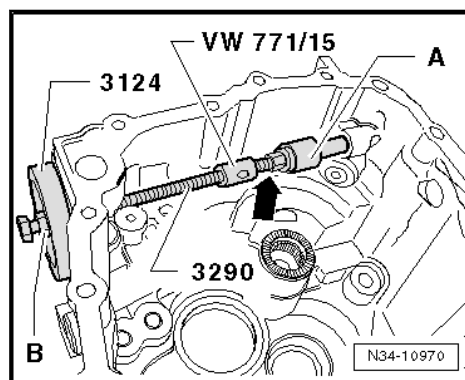
The needle sleeve will get damaged when it is removed and must be replaced.

Needle Sleeve -A-, Installing in Transmission Housing



- While installing, place the thrust washer -B- for the reverse shaft onto the needle sleeve.
- Support the transmission housing with the Press Piece - 37mm -VW 416 B- directly under the bearing mount.

Gearshift Shaft Bearing Bushing, Removing



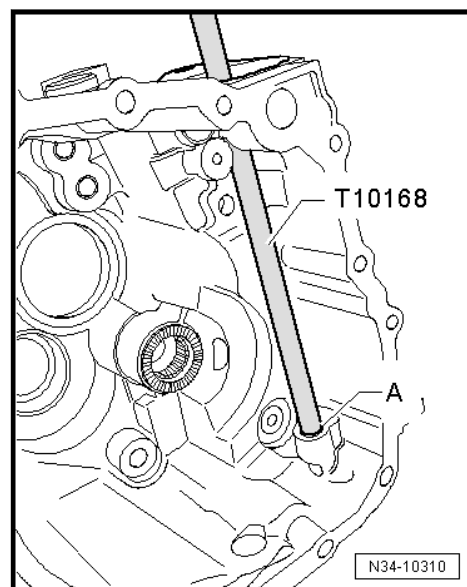
- Use the thread adapter from the Counter Support - VAS251621- -arrow-.



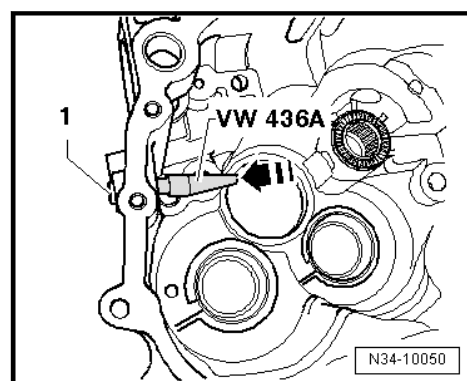
- Hold the spindle of the Subframe Support Tool -3290- and turn the nut -B-.

A - 14.5 to 18.5 mm Internal Puller, for example Puller - Kukko Internal - 14-19mm -Kukko 21/2-

Install the gearshift shaft bearing bushing -A- all the way up to the tool

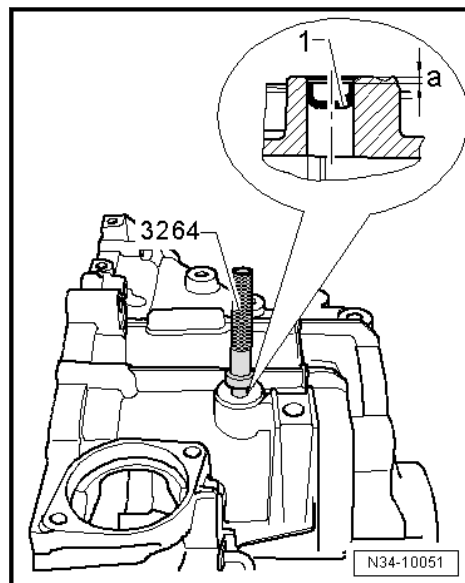


Plug -1-, Removing



- Remove the plug -1- from the inside of the transmission housing to the outside.

Plug -1-, Installing

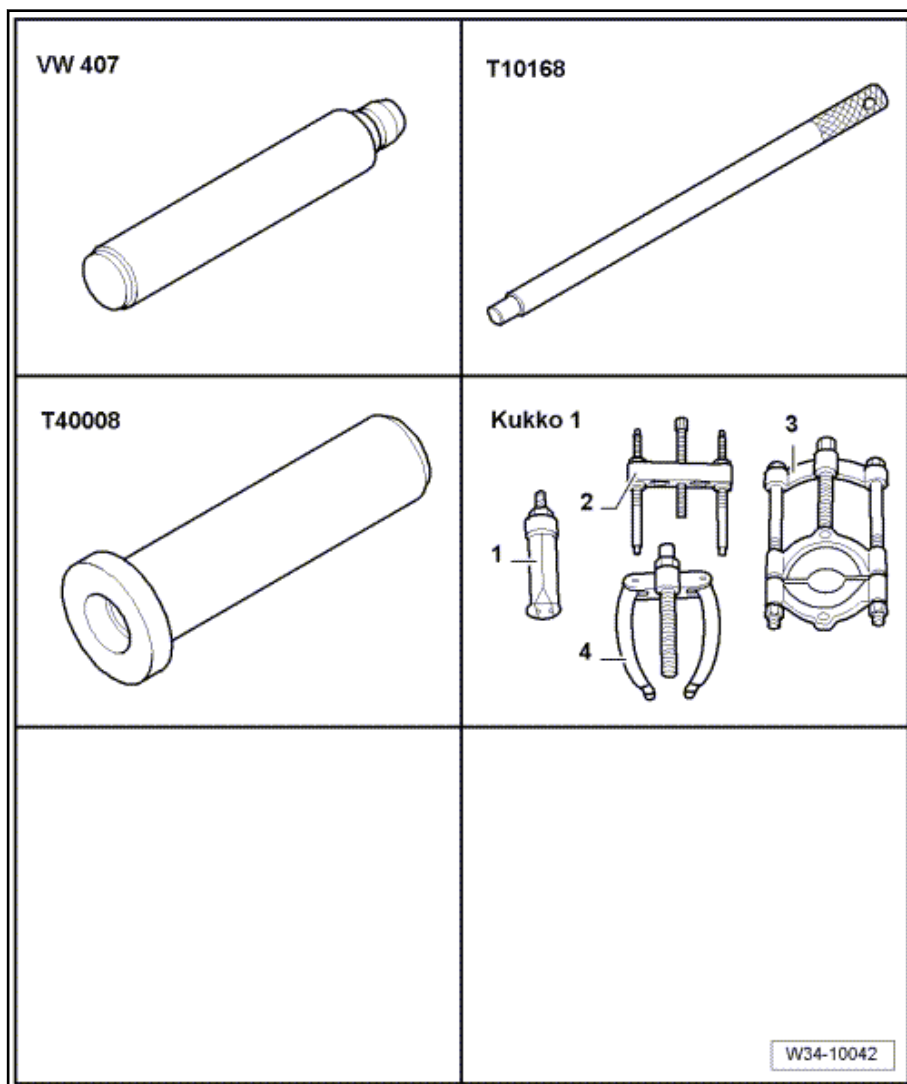


- Using the Bearing Installer - Crankshaft Pilot Bearing -3264-, drive in the plug to dimension -a- approximately 3 mm below the upper edge of the housing.



13 Clutch Housing, Servicing

Special tools and workshop equipment required



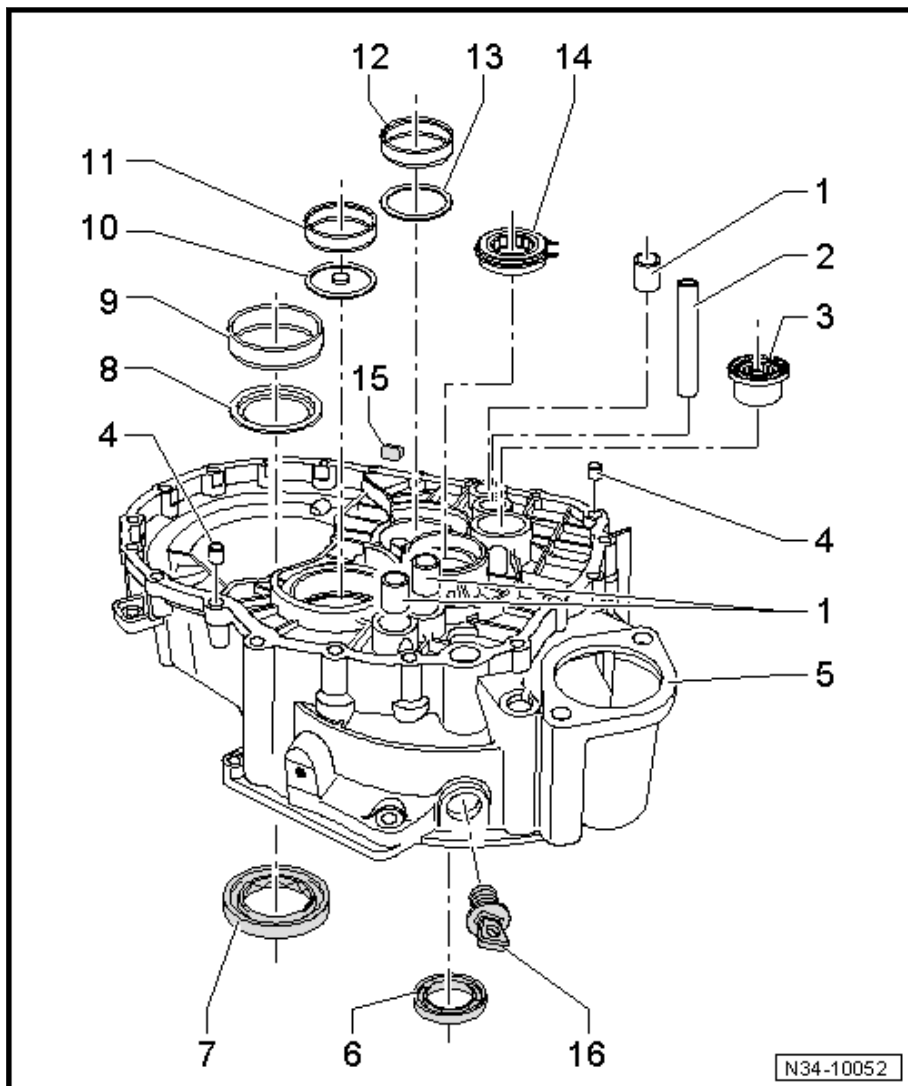
- ◆ Press Piece - Rod -VW 407-
- ◆ Bushing Driver - Selector Shaft -T10168-
- ◆ Seal Installer - Driveshaft -T40008-
- ◆ -1- Internal Puller -VAS251605-
- ◆ -1- Internal Puller (Kukko 21-4) -VAS251609-
- ◆ -4- Counter Support -VAS 251621-
- ◆ -4- Counter Support -VAS 251 623-

1 - Bearing Bushing

- ☐ For the shift rods
- ☐ Replace each time it is removed
- ☐ Removing. Refer to ➤ [Fig. "Shift Rod Bearing Bushing, Removing", page 369](#).
- ☐ Installing. Refer to ➤ [Fig. "Install the gearshift rod bearing bushing all the way up to the tool", page 370](#).

2 - Reverse Gear Shift Fork Shaft

- ☐ The shaft cannot be removed with workshop tools.
- ☐ A new shaft must be installed when using a new clutch housing. Refer to ➤ [Fig. "Install the shaft for the reverse gear shift fork in the clutch housing", page 371](#).
- ☐ Mount the reverse gear shift fork on the shaft. Refer to ➤ [Fig. "The reverse gear shift fork -1- is mounted on the shaft -2- behind the 5th and 6th gear shift rod -3-", page 344](#).
- ☐ If the shaft is omitted, it is mounted on the gearshift rod for the 5th and 6th gear shift fork. Refer to ➤ [Fig. "The reverse gear shift fork -1- is mounted on the gearshift rod with the 5th and 6th gear shift fork -2-", page 344](#).
- ☐ For components, refer to the ➤ Electronic Parts Catalog (ETKA).



3 - Needle Sleeve

- ☐ For the reverse shaft
- ☐ Replace each time it is removed
- ☐ Removing. Refer to ➤ [Fig. "Pull the needle sleeve out of the clutch housing", page 370](#).
- ☐ Installing. Refer to ➤ [Fig. "Needle Sleeve -A-, Installing in Clutch Housing", page 370](#).

4 - Alignment Sleeve

- ☐ Quantity: 2

5 - Clutch Housing

- ☐ When replacing, adjust the output shafts and differential. Refer to ➤ [O4 verview", page 494](#).

6 - Input Shaft Seal

- ☐ Removing. Refer to ➤ [Fig. "Remove the seal for the input shaft", page 371](#).
- ☐ Installing. Refer to ➤ [Fig. "Installing the seal for the input shaft", page 371](#).

7 - Seal

- ☐ FWD - for the right flange shaft
- ◆ Replace the right flange shaft for FWD. Refer to ➤ [F1.2 lange Shaft Seal, Replacing", page 457](#).
- ☐ AWD - for bevel box; between the manual transmission and bevel box



- ◆ Replace if the manual transmission is installed and for AWD vehicles. Refer to [⇒ B2.3 ox Seal, Replacing, with Manual Transmission Installed", page 465](#) .
- ◆ Remove using the Puller - Crankshaft/Power Steering Seal - 2 - T20143/2-
- ◆ With the transmission disassembled, it can be installed until it stops using the Seal Installer - Crankshaft -T40007-

8 - Washer

- ☐ For the differential
- ☐ Installed position: shoulder on inner diameter faces toward seal [⇒ Item 7 \(page 368\)](#)

9 - Outer Race/Tapered Roller Bearing

- ☐ For the differential
- ☐ Removing and Installing, FWD. Refer to [⇒ D5.1 isassembling and Assembling, FWD", page 495](#) .
- ☐ Removing and Installing, AWD. Refer to [⇒ D5.2 isassembling and Assembling, AWD", page 503](#) .
- ☐ When replacing, adjust the differential. Refer to [⇒ A5.3 djusting", page 513](#) .

10 - Oil Deflector Ring

- ☐ Installation position: shoulder at hole points toward output shaft

11 - Outer Race/Tapered Roller Bearing

- ☐ For 1st to 4th gear output shaft
- ☐ Removing and Installing. Refer to [⇒ t2.2 o 4th Gear Output Shaft, Disassembling and Assembling", page 396](#) .
- ☐ When replacing, adjust the 1st to 4th gear output shaft. Refer to [⇒ t2.3 hrough 4th Gear Output Shaft, Adjusting", page 428](#) .

12 - Outer Race/Tapered Roller Bearing

- ☐ For 5th/6th and reverse gear output shaft
- ☐ Removing and Installing. Refer to [⇒ -3.1 Input Shaft, 5th/6th and Reverse Gears", page 434](#) .
- ☐ When replacing: adjust output shaft for 5th/6th and reverse gear. Refer to [⇒ a3.3 nd Reverse Gear Output Shaft, Adjusting", page 448](#) .

13 - Washer

- ☐ For 5th/6th and reverse gear output shaft
- ☐ Always 0.65 mm thick

14 - Cylindrical Roller Bearing

- ☐ For the input shaft
- ☐ Removing and Installing. Refer to [⇒ -1.1 Input Shaft", page 383](#) .

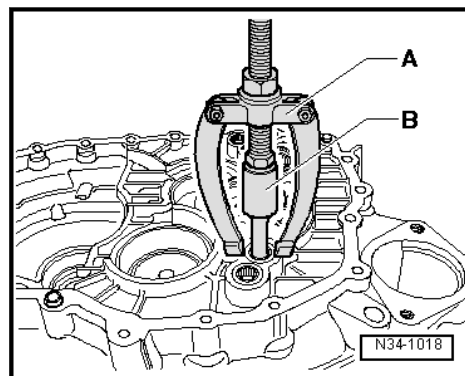
15 - Magnet

- ☐ Held in place by housing separating surface

16 - Cap

- ☐ Not on all clutch housings

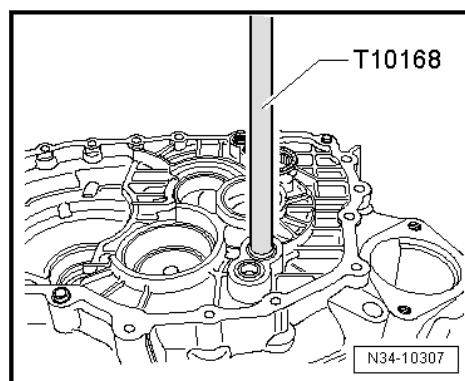
Shift Rod Bearing Bushing, Removing



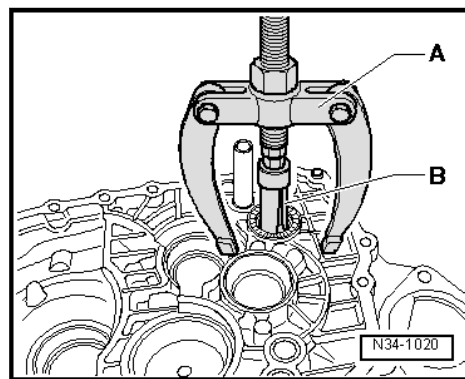
A - Counter Support, for example -VAS 251 621-

B - 14.5 to 18.5 mm Internal Puller, for example Puller - Kukko Internal - 14-19mm -Kukko 21/2-

Install the gearshift rod bearing bushing all the way up to the tool



Pull the needle sleeve out of the clutch housing



A - Counter Support, for example, Counter Support - VAS251623-

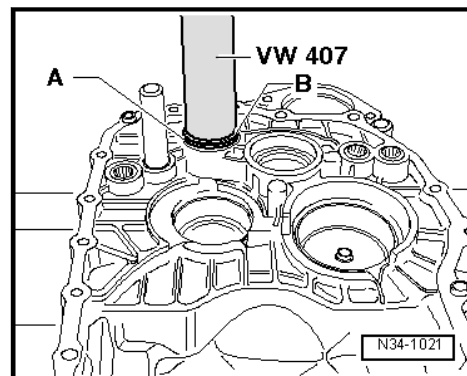
B - 23.5 - 30 mm Internal Puller, for example Internal Puller (Kukko 21-4) -VAS251609-



Note

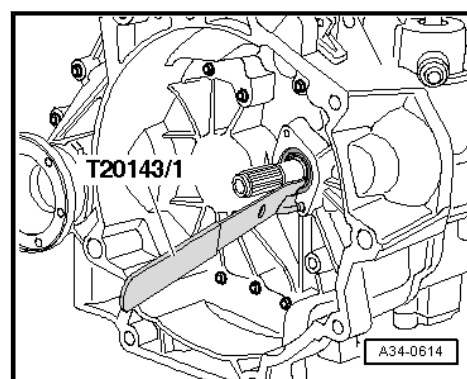
The needle sleeve will get damaged when it is removed and must be replaced.

Needle Sleeve -A-, Installing in Clutch Housing



- While installing, place the thrust washer -B- for the reverse shaft onto the needle sleeve.

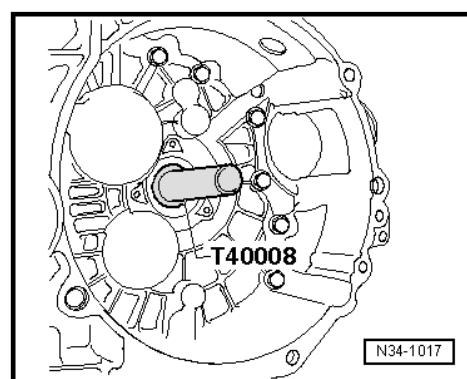
Remove the seal for the input shaft



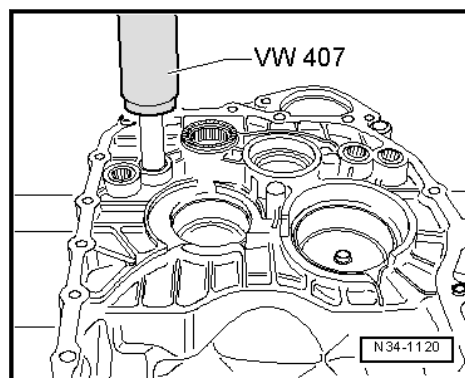
Note

The seal can be removed with a drift when the clutch housing is removed.

Installing the seal for the input shaft



Install the shaft for the reverse gear shift fork in the clutch housing





14 Shift Unit, Servicing



Note

- ◆ *Lubricate the bearing areas and sliding surfaces.*
- ◆ *Refer to the ⇒ Electronic Parts Catalog (ETKA) for the grease allocation.*



1 - Hex Nut, 23 Nm

- ☐ Self-locking
- ☐ Replace after removing

2 - Shift Lever

- ☐ Insert so that master spline aligns with shift rod
- ☐ Can be replaced with the shift mechanism still installed
- ☐ Installation position. Refer to ➤ [Fig. "Shift Lever/Relay Lever Installation Position", page 106](#).
- ☐ Installing. Refer to ➤ [Fig. "Shift Lever, Installing", page 105](#).
- ☐ After installing, adjust the shift mechanism. Refer to ➤ [M1.11 echanism, Adjusting", page 121](#).

3 - Slide Block

- ☐ Attached into the relay lever -Item 5- ➤ [Item 5 \(page 374\)](#)

4 - Bearing Bushing

- ☐ Not needed for the plastic relay lever

5 - Relay Lever

- ☐ Installation position. Refer to ➤ [Fig. "Shift Lever/Relay Lever Installation Position", page 106](#).
- ☐ After installing, adjust the shift mechanism. Refer to ➤ [M1.11 echanism, Adjusting", page 121](#).
- ☐ Plastic relay lever from 05/2007. Refer to ➤ [R1.8 elay Lever", page 108](#).

6 - Shift Unit

- ☐ Consisting of the selector shaft and the gearshift cover
- ☐ The components cannot be separated from each other
- ☐ Can be removed and installed with the transmission installed
- ☐ Gearshift shaft adapted together with the revised reverse gear shift fork mounting -Item 5- ➤ [Item 5 \(page 380\)](#)
- ☐ Gearshift shaft allocation. Refer to ➤ [Fig. "Gearshift Shaft Allocation", page 375](#).

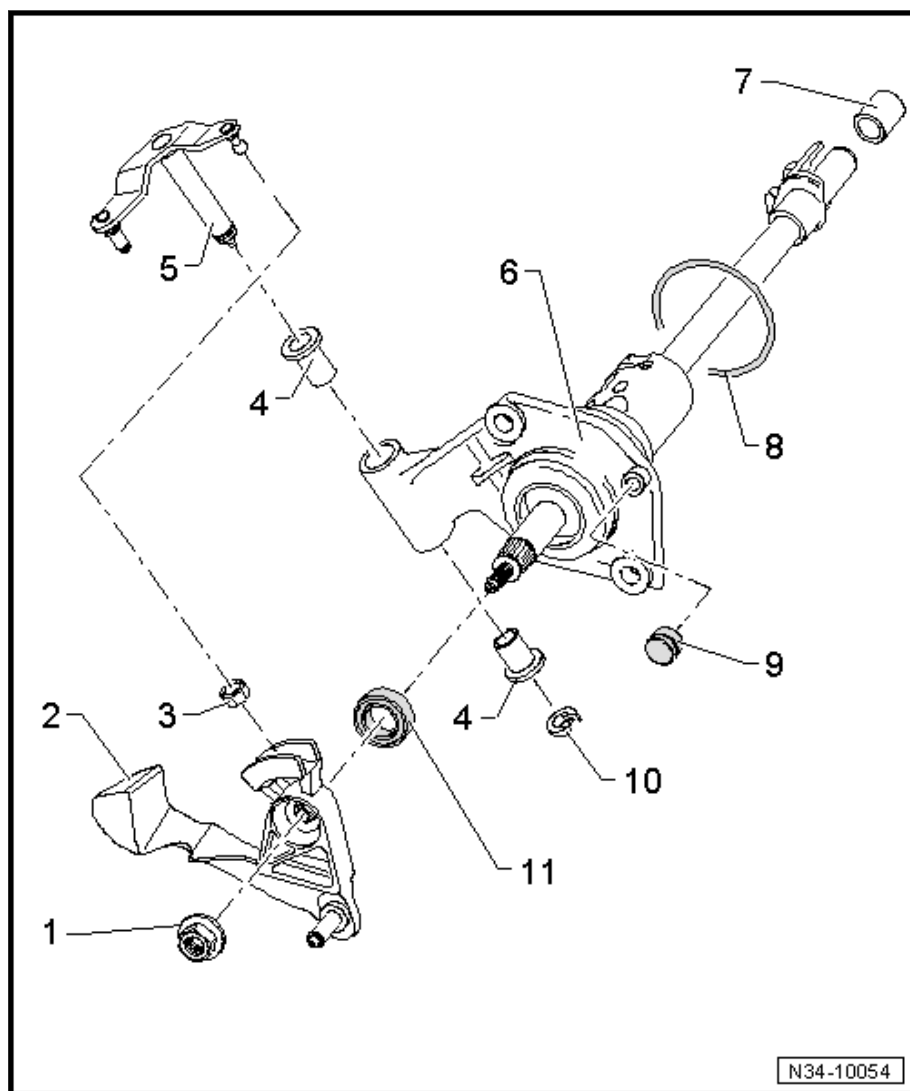
7 - Bearing Bushing

- ☐ For the gearshift shaft
- ☐ Removing and Installing. Refer to -Item 16- ➤ [Item 16 \(page 359\)](#).

8 - O-Ring

- ☐ Insert in the groove all around in the gearshift cover
- ☐ Install with transmission fluid
- ☐ Replace after removing

9 - Cap





- ☐ For the transmission ventilation

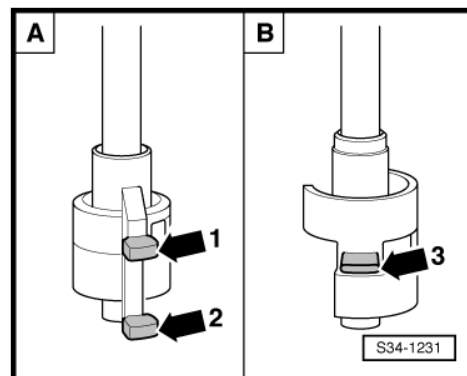
10 - Lock Washer

- ☐ For the relay lever
- ☐ Not on the plastic relay lever
- ☐ Replace after removing

11 - Gearshift Shaft Seal

- ☐ Replacing. Refer to ➤ [S14.1 haft Seal, Replacing](#), page 375 .

Gearshift Shaft Allocation

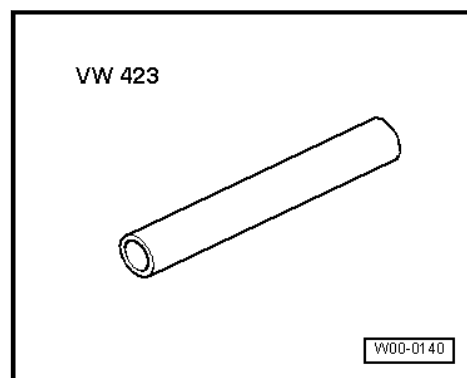


Number of Shift Fingers on Gearshift Shaft	Position of Reverse Gear Shift Fork
Image -A- = two shift fingers -arrow 1- and -arrow 2-	on the shaft for the reverse gear shift fork. Refer to ➤ Fig. "The reverse gear shift fork -1- is mounted on the shaft -2- behind the 5th and 6th gear shift rod -3-." , page 344 .
Image -B- = one shift finger -arrow 3-	on the gearshift rod with the 5th and 6th gear shift fork. Refer to ➤ Fig. "The reverse gear shift fork -1- is mounted on the gearshift rod with the 5th and 6th gear shift fork -2-." , page 344 .

14.1 Selector Shaft Seal, Replacing

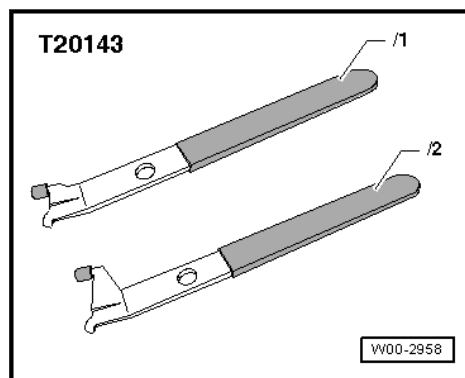
Special tools and workshop equipment required

- ◆ Press Piece - Shift Rod/Alternator -VW 423-





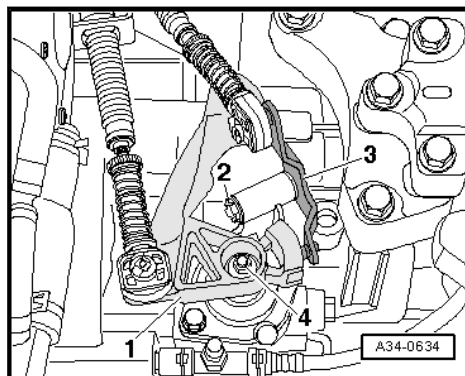
◆ Puller - Crankshaft/Power Steering Seal -T20143/1-



◆ Sealing Grease -G 052 128 A1-

- Remove entire air filter housing if it is located above the selector shaft. Refer to ➤ Rep. Gr. 23; Diesel Direct Injection System; Overview - Air Filter or ➤ Rep. Gr. 24; Fuel Injection; Air Filter, Removing and Installing.

Metal Relay Lever



- Remove the clip -2- and push the relay lever -3- to the side and out of the bearing.



Note

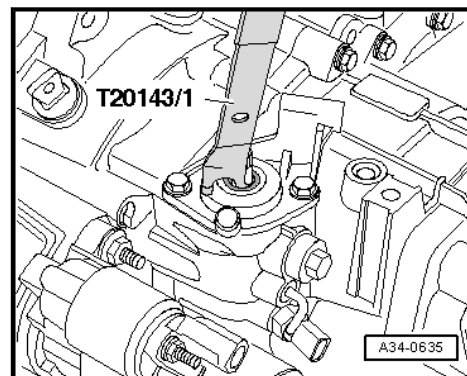
If the relay lever cannot be removed due to the transmission bracket, remove the selector cable from the relay lever. Guide the slide block out of the gearshift lever.

Plastic Relay Lever

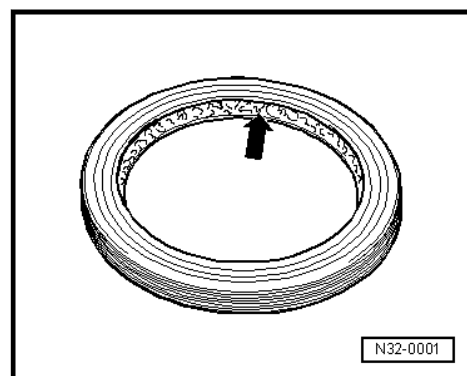
- Remove the relay lever with the cable retainer. Refer to ➤ [R1.8 relay Lever", page 108](#) .

Continuation for All Shift Mechanisms

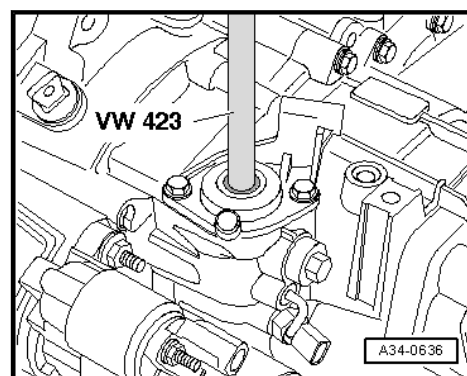
- Remove the nut -4- and remove the gearshift lever -1-.
- Pry out the seal using the Puller - Crankshaft/Power Steering Seal - 1 -T20143/1-.



- Lightly oil the outer edge of the new seal.



- Fill the space between the sealing/dust lip -arrow- halfway with Sealing Grease -G 052 128 A1-.
- Install the seal using Press Piece - Shift Rod/Alternator -VW 423-.



Install in reverse order of removal, while noting the following:

- Attach the shift lever to the transmission gearshift shaft and tighten the hex nut to the tightening specification ➔ [Item 1 \(page 374\)](#) .



Note

The gearshift lever can be installed in only one position.

- Adjust the gearshift mechanism. Refer to ➔ [M1.11 echanism, Adjusting”, page 121](#) .
- If it was removed earlier install the complete air filter housing. Refer to ➔ Rep. Gr. 23; Diesel Direct Injection System;

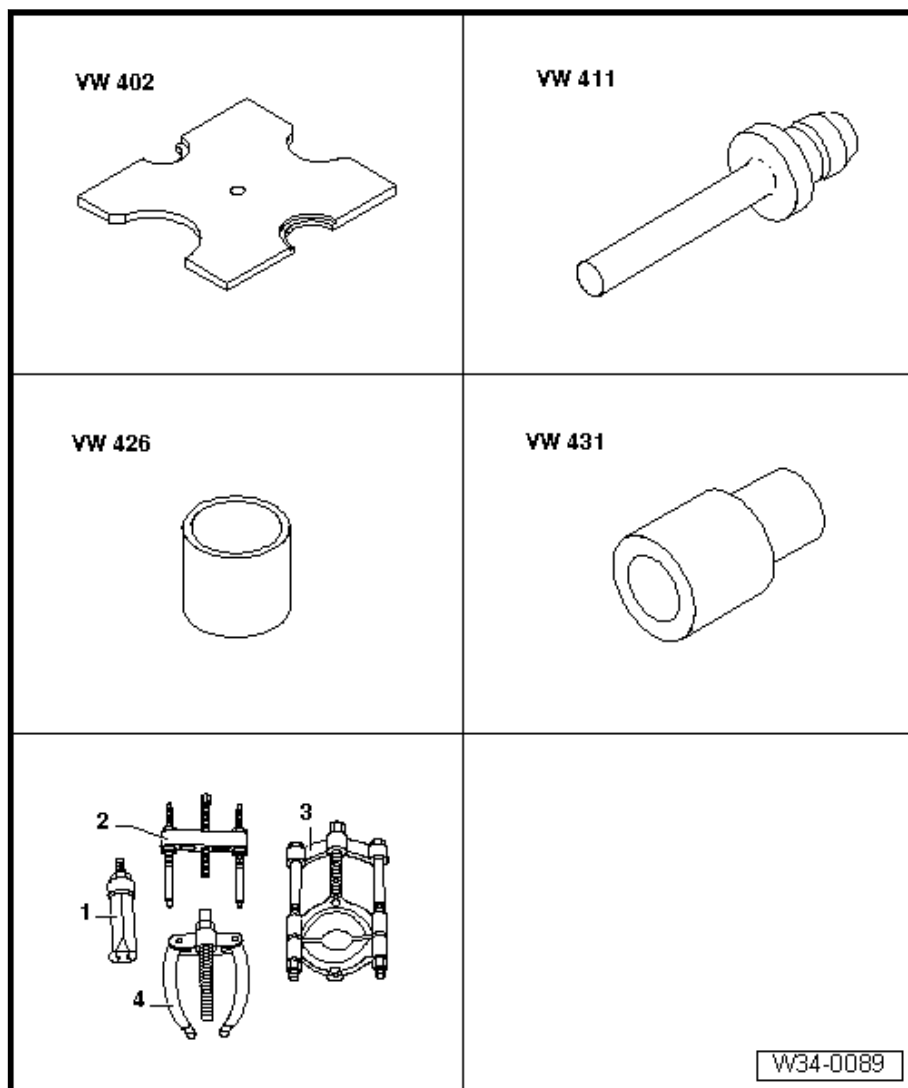


Overview - Air Filter or ⇒ Rep. Gr. 24; Fuel Injection System;
Air Filter, Removing and Installing.



15 Shift Forks, Servicing

Special tools and workshop equipment required



- ◆ Press Plate -VW 402-
- ◆ Press Piece - Rod -VW 411-
- ◆ Press Piece - Multiple Use -VW 426-
- ◆ Press Piece - Multiple Use -VW 431-
- ◆ -1- Internal Puller -VAS 251607-
- ◆ -4- Counter Support -VAS 251621-



1 - Rubber Damper

- ☐ Can be removed and installed by hand

2 - Shift Rod with 1st and 2nd Gear Shift Fork

3 - Shift Rod with 3rd and 4th Gear Shift Fork

4 - Shift Rod with 5th and 6th Gear Shift Fork

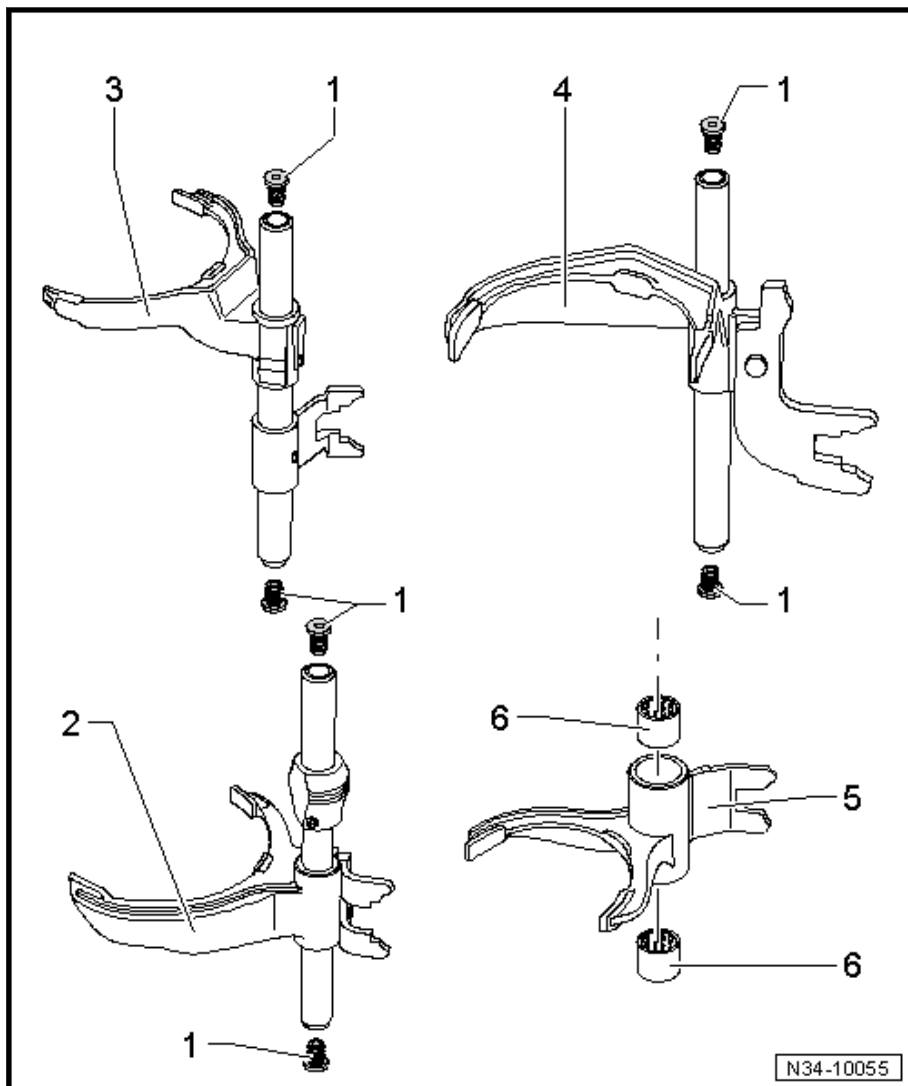
- ☐ Also used for mounting the reverse gear shift fork on some transmissions

5 - Reverse Gear Shift Fork

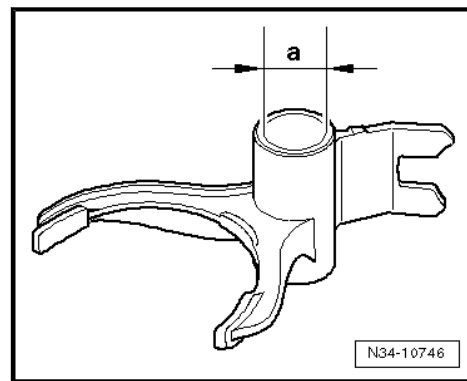
- ☐ On the axle for the reverse gear shift fork. Refer to ➤ [Fig. "The reverse gear shift fork -1- is mounted on the shaft -2- behind the 5th and 6th gear shift rod -3-." , page 344](#) .
- ☐ From transmission manufacture date 03/06/2006, ball sleeve -Item 6- ➤ [Item 6 \(page 380\)](#) has been omitted
- ☐ Gradually discontinued
- ☐ Reverse gear shift fork is adapted
- ☐ If the shaft for the reverse gear shift fork is omitted, it is mounted on the gearshift rod for the 5th and 6th gear shift fork. Refer to ➤ [Fig. "The reverse gear shift fork -1- is mounted on the gearshift rod with the 5th and 6th gear shift fork -2-." , page 344](#) .
- ☐ Reverse Gear Shift Forks, Differentiating. Refer to ➤ [Fig. "Reverse Gear Shift Forks, Differentiating" , page 380](#) .
- ☐ For components, refer to the ➤ Electronic Parts Catalog (ETKA).

6 - Ball Sleeve

- ☐ Removing. Refer to ➤ [Fig. "Reverse Gear Shift Fork Ball Sleeve, Removing, Through Transmission Production Date 03/05/2006" , page 381](#) .
- ☐ Installing. Refer to ➤ [Fig. "Reverse Gear Shift Fork Ball Sleeve, Installing, Through Transmission Production Date 03/05/2006" , page 381](#) .
- ☐ From transmission manufacture date 03/06/2006, ball sleeve has been omitted
- ☐ Gradually discontinued

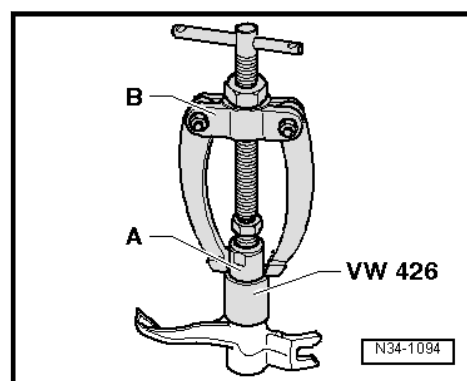


Reverse Gear Shift Forks, Differentiating



Dimension "a" mm	Reverse Gear Shift Fork	Location
24	with ball sleeve	on the shaft for the reverse gear shift fork. Refer to ➤ Fig. <u>“The reverse gear shift fork -1- is mounted on the shaft -2- behind the 5th and 6th gear shift rod -3-.”, page 344 .</u>
18	without ball sleeve	
15	without ball sleeve	on the gearshift rod with the 5th and 6th gear shift fork. Refer to ➤ Fig. <u>“The reverse gear shift fork -1- is mounted on the gearshift rod with the 5th and 6th gear shift fork -2-.”, page 344 .</u>

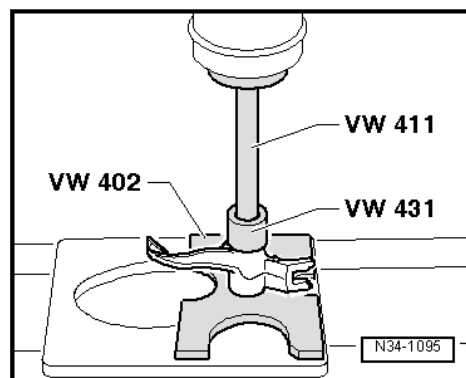
Reverse Gear Shift Fork Ball Sleeve, Removing, Through
Transmission Production Date 03/05/2006



A - Internal Puller 18 to 23 mm, for example Puller - Kukko
Internal - 18.5-23.5mm -Kukko 21/3-

B - Counter Support, for example -VAS 251 621-

Reverse Gear Shift Fork Ball Sleeve, Installing, Through Trans-
mission Production Date 03/05/2006





35 – Gears, Shafts

1 Input Shaft

1.1 Overview - Input Shaft



Note

- ◆ *Secure the transmission on the assembly stand. Refer to [⇒ S7 securing to Engine/Transmission Holder](#), [page 250](#).*
- ◆ *Warm the toothed gear to approximately 100 °C using Inductive Heater -VAS 6414-. Wear protective gloves.*
- ◆ *Install all input shaft bearings with transmission fluid.*
- ◆ *Replace grooved ball bearing [⇒ Item 6 \(page 384\)](#) after removing.*

1 - Circlip

- ☐ For the grooved ball bearing/input shaft -Item 6- ➤ [Item 6 \(page 384\)](#)
- ☐ Removing and Installing. Refer to ➤ [S11.8 sequence, Transmission without Circlip A for Metal Input Shaft Cap", page 314](#) .

2 - Washer

- ☐ Outer circumference = 78.6 mm
- ☐ Only used on modified transmission housings (from transmission production date 04/10/2006 through approximately 01/20/2008). Refer to ➤ [B1.2.1 all Bearing Changes", page 391](#) .
- ☐ For components, refer to the ➤ Electronic Parts Catalog (ETKA).

3 - Transmission Housing

- ☐ Adapted in the grooved ball bearing seat area ➤ [Item 6 \(page 384\)](#) and washers ➤ [Item 2 \(page 384\)](#) and ➤ [Item 4 \(page 384\)](#) from transmission build date 04/10/2006 through approximately 01/20/2008. Refer to ➤ [B1.2.1 all Bearing Changes", page 391](#) .

- ☐ Flat areas are on grooved ball bearing and its bearing seat approximately from transmission production date 01/21/2008. Refer to ➤ [B1.2.1 all Bearing Changes", page 391](#) .
- ☐ For components, refer to the ➤ Electronic Parts Catalog (ETKA).

4 - Washer

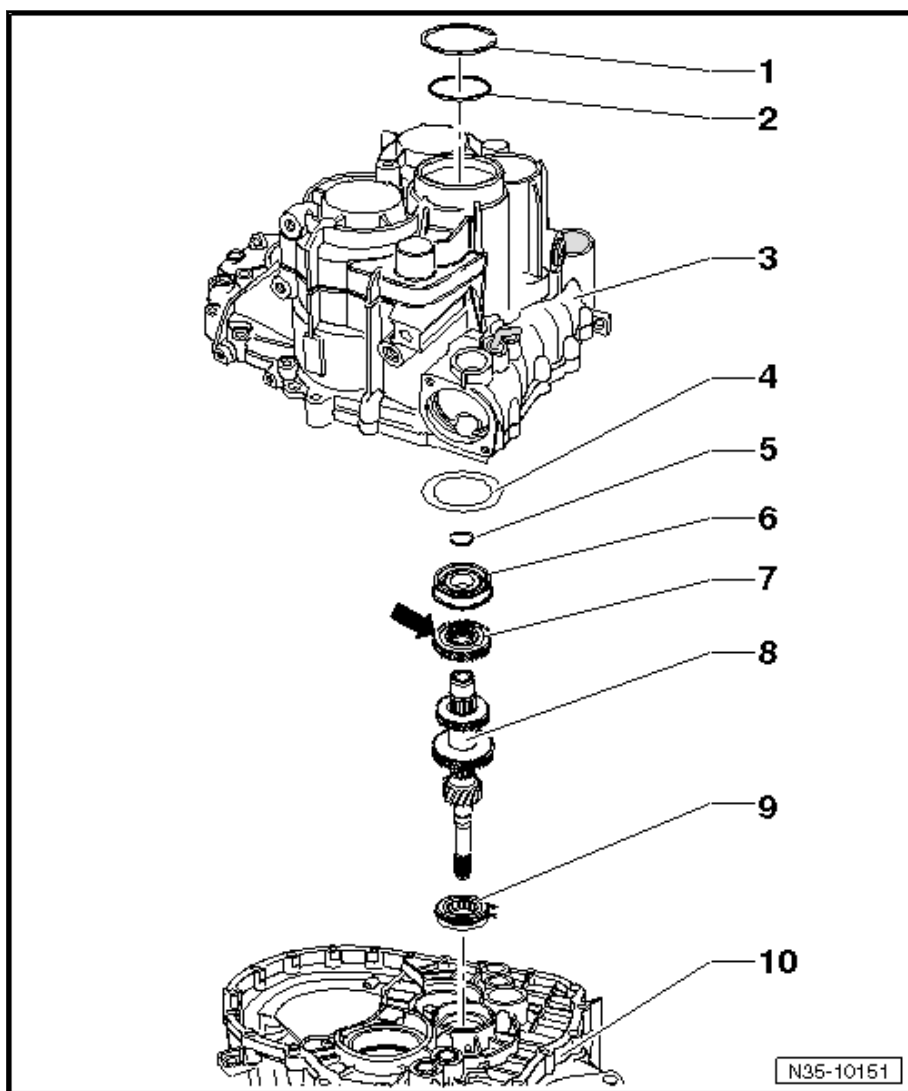
- ☐ Outer diameter = 85 mm
- ☐ Only used on modified transmission housings (from transmission production date 04/10/2006 through approximately 01/20/2008). Refer to ➤ [B1.2.1 all Bearing Changes", page 391](#) .
- ☐ For components, refer to the ➤ Electronic Parts Catalog (ETKA).

5 - Circlip

- ☐ Redetermine when replacing the grooved ball bearing -Item 6- ➤ [Item 6 \(page 384\)](#) and the input shaft -Item 8- ➤ [Item 8 \(page 385\)](#) . Refer to ➤ [Fig. "Grooved Ball Bearing Circlip on Input Shaft, Determining", page 389](#) .

6 - Grooved Ball Bearing

- ☐ Replace after removing
- ☐ Removing. Refer to ➤ [Fig. "Grooved Ball Bearing, Removing", page 388](#) .
- ☐ Installation position. Refer to ➤ [Fig. "Grooved Ball Bearing Installation Position and Installing Grooved Ball Bearing", page 389](#) .
- ☐ Installing. Refer to ➤ [Fig. "Grooved Ball Bearing Installation Position and Installing Grooved Ball Bearing", page 389](#) .





- ❑ Flat areas are on grooved ball bearing and its bearing seat approximately from transmission production date 01/21/2008. Refer to ➔ [Fig. ““Flattened areas on the grooved ball bearing -A- and bearing seat -B- in the transmission housing approximately from transmission build date 2/21/08.””, page 392](#) .

7 - 5th Gear

- ❑ Available as a replacement part together with the input shaft
- ❑ Removing. Refer to ➔ [Fig. ““5th Gear Wheel, Removing””, page 388](#) .
- ❑ Installed position: the surrounding groove -arrow- points toward grooved ball bearing -Item 6- ➔ [Item 6 \(page 384\)](#) .
- ❑ Installing. Refer to ➔ [Fig. ““5th Gear Wheel, Warming and Installing””, page 388](#) .

8 - Input Shaft

- ❑ With 3rd/4th and 6th gear

9 - Cylindrical Roller Bearing

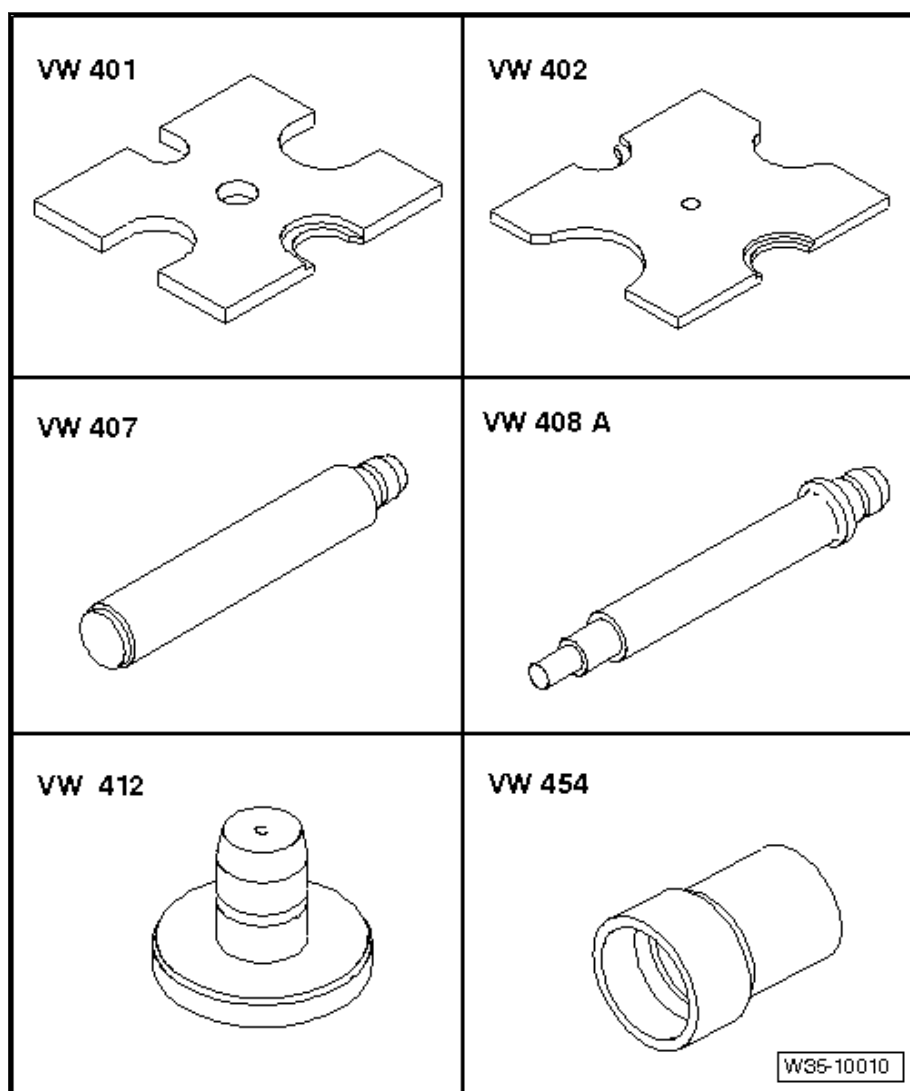
- ❑ With circlip
- ❑ Removing. Refer to ➔ [Fig. ““Cylindrical Roller Bearing, Removing from Clutch Housing””, page 390](#) .
- ❑ Installing. Refer to ➔ [Fig. ““Cylindrical Roller Bearing, Installing in Clutch Housing””, page 390](#) .
- ❑ Installed position: the circlip in bearing points to input shaft

10 - Clutch Housing

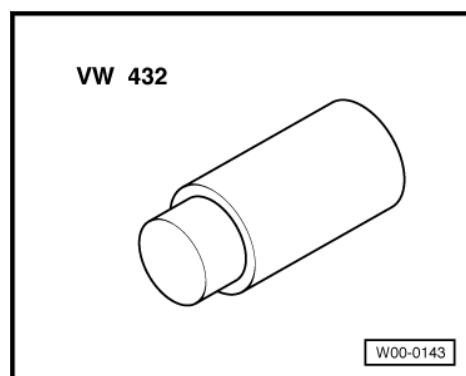
1.2 Input Shaft, Disassembling and Assembling



**Special tools and workshop
equipment required**

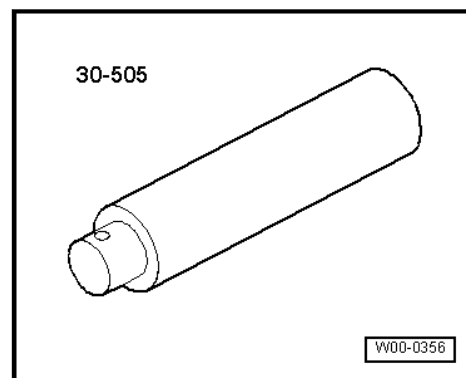


- ◆ Press Plate -VW 401-
- ◆ Press Plate -VW 402-
- ◆ Press Piece - Rod -VW 407-
- ◆ Press Piece - Rod -VW 408 A-
- ◆ Press Piece - Multiple Use -VW 412-
- ◆ Press Piece - Multiple Use -VW 454-
- ◆ Press Piece - Bushing - 50mm Diameter -VW 432-

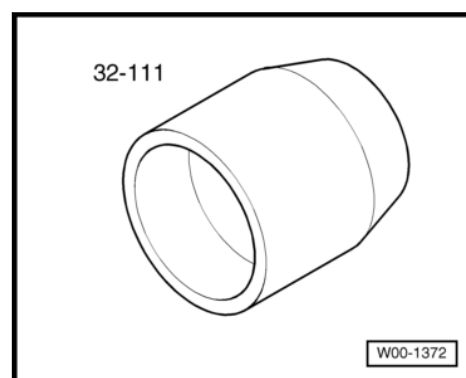




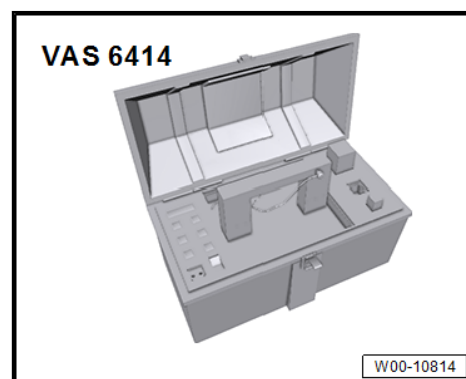
- ◆ Locking Pin Driver -30 - 505-



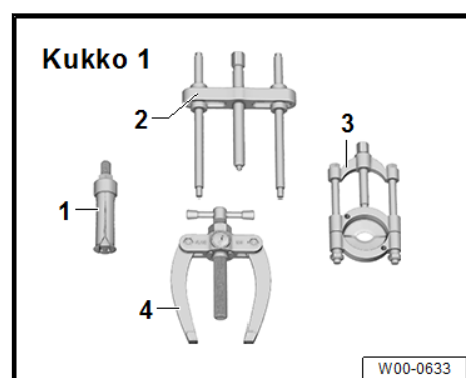
- ◆ Bearing Installer - Multiple Use -32 - 111-



- ◆ Inductive Heater -VAS 6414-



- ◆ -1- Internal Puller -VAS 251611-



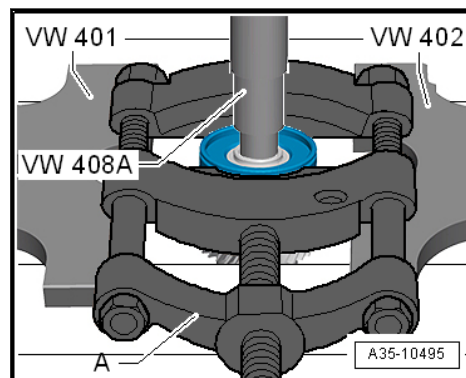
- ◆ -3- Splitter -VAS251411-
- ◆ -4- Counter Support -VAS 251 623-
- ◆ Feeler Gauge



Input Shaft, Disassembling

- Remove the grooved ball bearing circlip.

Grooved Ball Bearing, Removing

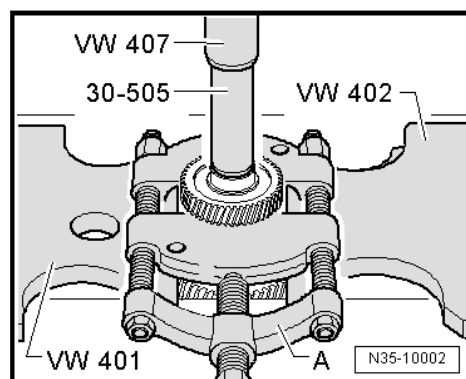


- Mount the Separating Tool -A- into the groove in the ball bearing for the locking ring.

A - 22 to 115 mm Separating Tool, for example, Splitter -VAS 251411-

- The grooved ball bearing and the 5th gear wheel can also be removed together by positioning the Separating Tool -A- under the 5th gear wheel as shown in the following image.

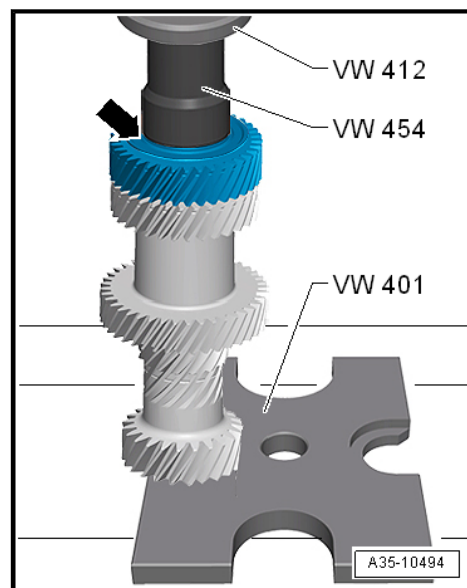
5th Gear Wheel, Removing



A - 22 to 115 mm Separating Tool, for example, Splitter -VAS 251411-

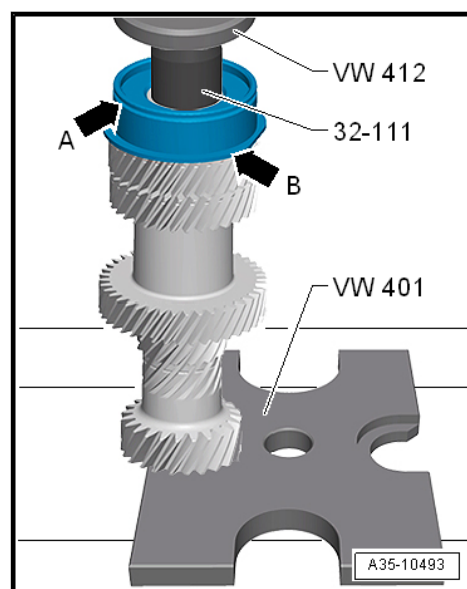
Input Shaft, Assembling

5th Gear Wheel, Warming and Installing



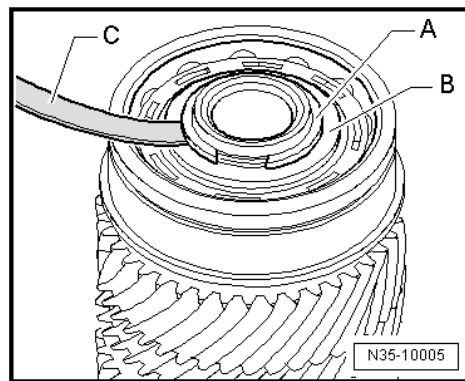
- The groove -arrow- on the gear must face upward.

Grooved Ball Bearing Installation Position and Installing Grooved Ball Bearing



- Grooved ball bearing installation location: the groove for the locking ring faces up -arrow A- and the collar -arrow B- must face the 5th gear wheel.
- Determine the grooved ball bearing circlip on the input shaft (see the following image) and install it.

Grooved Ball Bearing Circlip on Input Shaft, Determining



- Insert a 1.86 mm thick circlip -A- into the input shaft groove and push upward.
- Use a feeler gauge -C- to measure between the grooved ball bearing -B- and the inserted circlip -A-.
- Remove the circlip used for the measurement.
- Select the appropriate circlip according to the table.



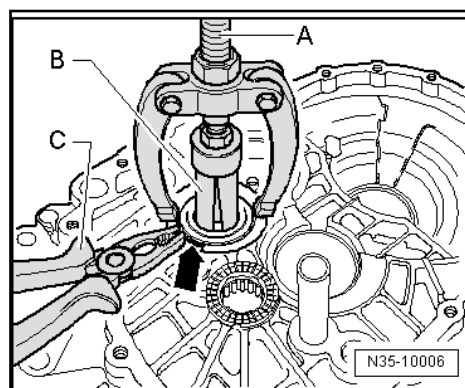
Note

Allocate the correct circlips. Refer to the ⇒ *Electronic Parts Catalog (ETKA)*.

The following circlips are available:

Measured value (mm)	Circlip thickness (mm)	Axial play (mm)
0.01 to 0.05	1.86	0.01 to 0.05
0.05 to 0.07	1.89	0.01 to 0.05
0.07 to 0.10	1.92	0.01 to 0.05
0.10 to 0.13	1.95	0.01 to 0.05
0.13 to 0.16	1.98	0.01 to 0.05

Cylindrical Roller Bearing, Removing from Clutch Housing

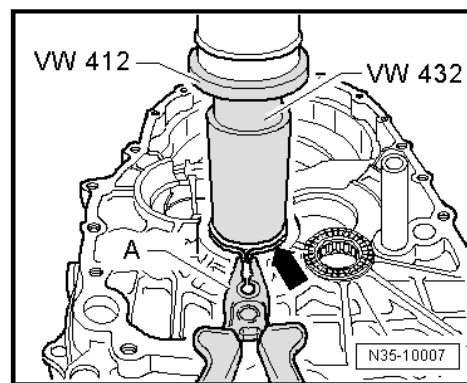


- Use pliers -C- to press the cylindrical roller bearing circlip -arrow- together during removal.

A - Counter Support, for example, Counter Support - VAS251623-

B - Internal Puller 30 to 37 mm, for example Internal Puller -VAS251611-

Cylindrical Roller Bearing, Installing in Clutch Housing



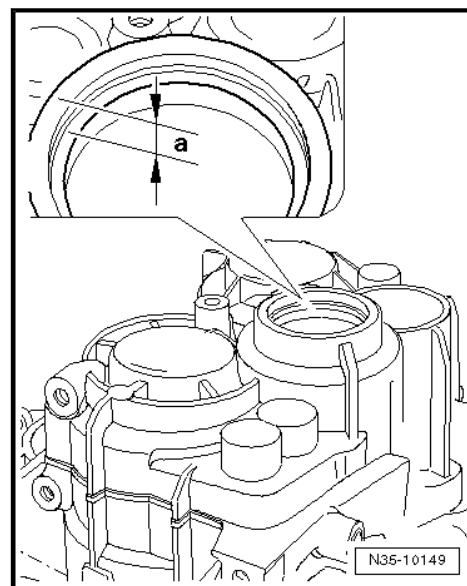
- Use pliers -A- to press the cylindrical roller bearing circlip -arrow- together during installation.
- Remove the pliers before the cylindrical roller bearing is in its installation position. The circlip must engage into the clutch housing groove.

1.2.1 Grooved Ball Bearing Changes

From transmission build date 04/10/2006 through approximately 01/21/2008

There is a washer above and below the bearing seat for the grooved ball bearing ➔ [Item 6 \(page 384\)](#) .

Above the Bearing Seat:

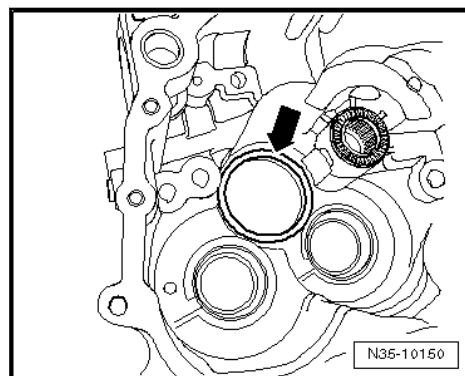


Bearing Seat		Washer above Bearing Seat
Through transmission build date 04/09/2006	Dimension "a" 10 mm	no
From transmission build date 4/10/06 through approximately 1/20/08	Dimension "a" 10.7 mm	yes
Approximately from transmission build date 1/21/2008	Below the bearing seat: flat area for the grooved ball bearing	no



Below the bearing seat:

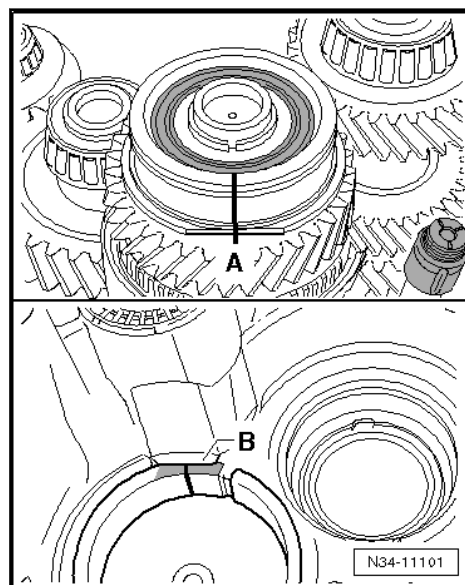
**Slightly deeper than from transmission build date 10/04/2006
through approximately 01/20/2008**



The grooved ball bearing seat -arrow- is slightly deeper to hold the washer under the grooved ball bearing ⇒ [Item 6 \(page 384\)](#) .

Below Bearing Seat		Washer below Bearing Seat
Through transmission production date 04/09/2006	Not deeper	no
From transmission build date 4/10/06 through approximately 1/20/08	Slightly deeper.	yes
Approximately from transmission build date 1/21/2008	Flat area -B- for the grooved ball bearing -A-	no

Flattened areas on the grooved ball bearing -A- and bearing seat -B- in the transmission housing approximately from transmission build date 2/21/08.



- If flat areas are present, do not insert any washers above and below the grooved ball bearing.



2 1st through 4th Gear Output Shaft

2.1 Overview - Output Shaft, 1st to 4th Gears

1st to 4th Gear Output Shaft, Disassembling and Assembling.
Refer to ⇒ [t2.2 o 4th Gear Output Shaft, Disassembling and Assembling](#), page 396 .



Note

- ◆ *Secure the transmission on the assembly stand. Refer to ⇒ [S7 ecuring to Engine/Transmission Holder](#), page 250 .*
- ◆ *To install, warm the inner races/tapered roller bearing and synchronizer hub to approximately 100 °C [212 F] using Inductive Heater -VAS 6414-. Wear protective gloves.*
- ◆ *Adjust the output shaft if it or the tapered roller bearing are being replaced. Refer to ⇒ [t2.3 hrough 4th Gear Output Shaft, Adjusting](#), page 428 .*
- ◆ *Replace both tapered roller bearings together.*



1 - Clutch Housing

2 - Oil Deflector Ring

3 - Dished Washer

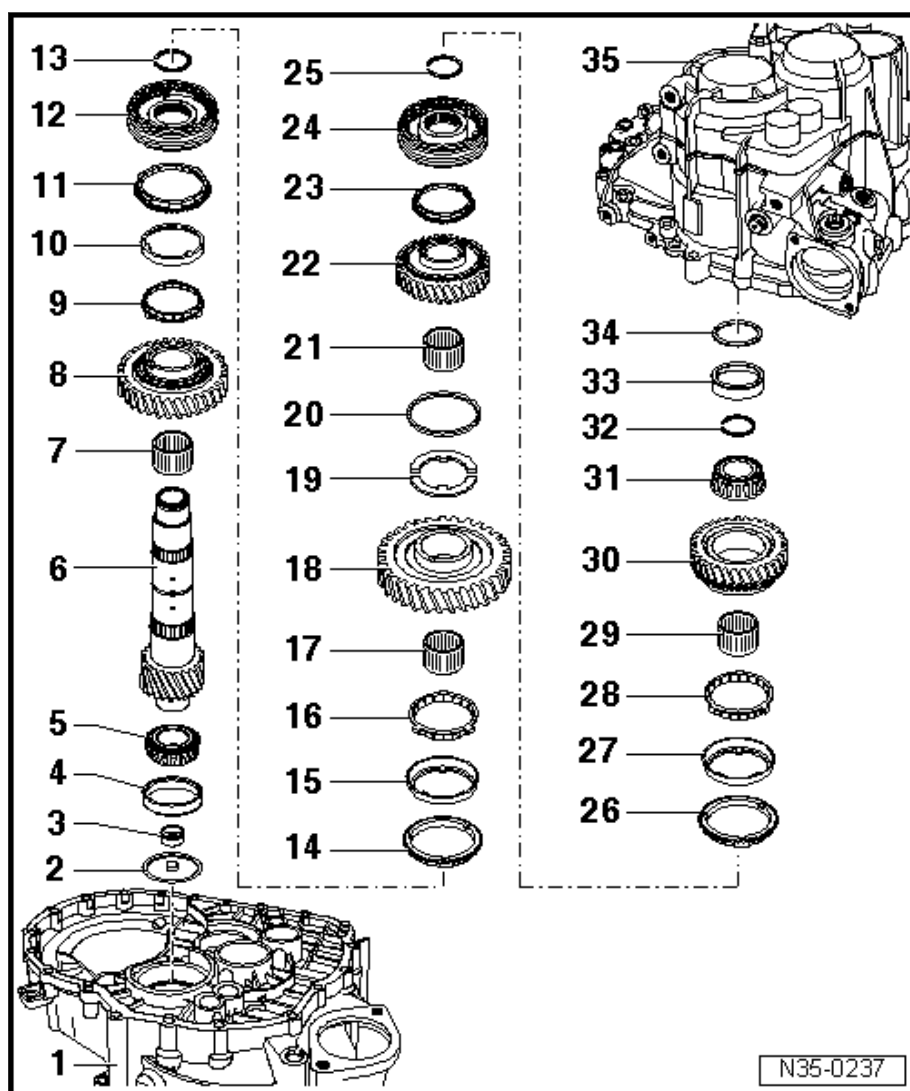
- ☐ Removing. Refer to ➤ [Fig. "Dished Washer -A-, Removing from Output Shaft", page 401](#).
- ☐ Installing. Refer to ➤ [Fig. "Dished Washer, Installing in Output Shaft", page 401](#).

4 - Outer Race/Tapered Roller Bearing

- ☐ Removing. Refer to ➤ [Fig. "Outer Race/Tapered Roller Bearing, Removing from Clutch Housing", page 402](#).
- ☐ Installing. Refer to ➤ [Fig. "Outer Race/Tapered Roller Bearing, Installing in Clutch Housing", page 402](#).

5 - Inner Race/Tapered Roller Bearing

- ☐ Removing. Refer to ➤ [Fig. "Inner Race/Tapered Roller Bearing, Removing on Side facing Clutch Housing", page 401](#).
- ☐ Installing. Refer to ➤ [Fig. "Inner Race/Tapered Roller Bearing, Installing on Side facing Clutch Housing", page 402](#).



6 - Output Shaft

- ☐ For 1st through 4th gear
- ☐ Adjusting. Refer to ➤ [12.3 hrough 4th Gear Output Shaft, Adjusting", page 428](#).

7 - Needle Bearing

- ☐ For 2nd gear

8 - 2nd Gear Assembly

- ☐ The 1st/2nd gear synchronization changed starting from transmission production date 10/26/2009. For differentiation, refer to ➤ [12.2.1 st/2nd Gear Synchronization, Differentiating 3rd Gear Synchronization", page 406](#).

9 - Synchronizer Ring (2nd Gear Inner Race)

- ☐ The 1st/2nd gear synchronization changed starting from transmission production date 10/26/2009. For differentiation, refer to ➤ [12.2.1 st/2nd Gear Synchronization, Differentiating 3rd Gear Synchronization", page 406](#).

10 - 2nd Gear Outer Race

- ☐ The 1st/2nd gear synchronization changed starting from transmission production date 10/26/2009. For differentiation, refer to ➤ [12.2.1 st/2nd Gear Synchronization, Differentiating 3rd Gear Synchronization", page 406](#).

11 - 2nd Gear Synchronizer Ring



- ☐ The 1st/2nd gear synchronization changed starting from transmission production date 10/26/2009. For differentiation, refer to [⇒ 12.2.1 1st/2nd Gear Synchronization, Differentiating 3rd Gear Synchronization](#), page 406 .

12 - Locking Collar with 1st and 2nd Gear Synchronizer Hub

- ☐ After removing circlip [⇒ Item 13 \(page 395\)](#) , remove the 2nd gear wheel. Refer to [⇒ Fig. "1st and 2nd Gear Locking Collar and Synchronizer Hub, Removing"](#), page 405 .
- ☐ Disassembling. Refer to [⇒ Fig. "1st/2nd Gear and 3rd/4th Gear Locking Collar and Synchronizer Hub, Disassembling and Assembling"](#), page 410 .
- ☐ Locking Collar/Synchronizer Hub, Assembling. Refer to [⇒ Fig. "1st/2nd Gear and 3rd/4th Gear Locking Collar and Synchronizer Hub, Disassembling and Assembling"](#), page 410 .
- ☐ The 1st/2nd gear synchronization changed starting from transmission production date 10/26/2009. For differentiation, refer to [⇒ 12.2.1 1st/2nd Gear Synchronization, Differentiating 3rd Gear Synchronization](#), page 406 .

13 - Circlip

14 - 1st Gear Synchronizer Ring

- ☐ The 1st/2nd gear synchronization changed starting from transmission production date 10/26/2009. For differentiation, refer to [⇒ 12.2.1 1st/2nd Gear Synchronization, Differentiating 3rd Gear Synchronization](#), page 406 .

15 - 1st Gear Outer Race

- ☐ The 1st/2nd gear synchronization changed starting from transmission production date 10/26/2009. For differentiation, refer to [⇒ 12.2.1 1st/2nd Gear Synchronization, Differentiating 3rd Gear Synchronization](#), page 406 .

16 - Synchronizer Ring for 1st Gear

- ☐ The 1st/2nd gear synchronization changed starting from transmission production date 10/26/2009. For differentiation, refer to [⇒ 12.2.1 1st/2nd Gear Synchronization, Differentiating 3rd Gear Synchronization](#), page 406 .

17 - Needle Bearing

- ☐ For 1st gear

18 - 1st Gear Assembly

- ☐ The 1st/2nd gear synchronization changed starting from transmission production date 10/26/2009. For differentiation, refer to [⇒ 12.2.1 1st/2nd Gear Synchronization, Differentiating 3rd Gear Synchronization](#), page 406 .

19 - Thrust Washers

- ☐ For 1st and 4th gears
- ☐ Quantity: 2
- ☐ Insert the tab on the thrust washer into the output shaft hole

20 - Washer

- ☐ Holds the thrust washers -Item 19- [⇒ Item 19 \(page 395\)](#) in place on the output shaft

21 - Needle Bearing

- ☐ For 4th gear

22 - 4th Gear Assembly

23 - 4th Gear Synchronizer Ring

- ☐ Made of brass or steel
- ☐ Checking for Wear. Refer to [⇒ Fig. "4th Gear Synchronizer Ring, Checking for Wear"](#), page 412 .

24 - Locking Collar with Synchronizer Hub for 3rd and 4th Gears

- ☐ After removing locking ring -Item 25- [⇒ Item 25 \(page 396\)](#) , remove the 4th gear wheel. Refer to [⇒ Fig. "3rd and 4th Gear Synchronizer Hub/Locking Collar, Removing with 4th Gear Wheel"](#), page 405 .
- ☐ Disassembling. Refer to [⇒ Fig. "1st/2nd Gear and 3rd/4th Gear Locking Collar and Synchronizer Hub, Disassembling and Assembling"](#), page 410 .
- ☐ Locking Collar/Synchronizer Hub Installation Position. Refer to [⇒ Fig. "3rd and 4th Gear Locking Collar/Synchronizer Hub Installation Position"](#), page 413 .



- ❑ Locking Collar/Synchronizer Hub, Assembling. Refer to ➤ [Fig. "1st/2nd Gear and 3rd/4th Gear Locking Collar and Synchronizer Hub, Disassembling and Assembling", page 410](#) and ➤ [Fig. "1st/2nd Gear and 3rd/4th Gear Locking Collar/Synchronizer Hub, Assembling", page 410](#).
- ❑ Installing. Refer to ➤ [Fig. "Synchronizer Hub with 3rd and 4th Gear Locking Collar, Installing", page 413](#).

25 - Circlip

26 - 3rd Gear Synchronizer Ring

- ❑ 3rd gear synchronization changed starting from transmission production date 05/25/2010. For differentiation, refer to ➤ [12.2.1 st/2nd Gear Synchronization, Differentiating 3rd Gear Synchronization", page 406](#).

27 - 3rd Gear Outer Race

- ❑ 3rd gear synchronization changed starting from transmission production date 05/25/2010. For differentiation, refer to ➤ [12.2.1 st/2nd Gear Synchronization, Differentiating 3rd Gear Synchronization", page 406](#).

28 - Synchronizer Ring for 3rd Gear

- ❑ 3rd gear synchronization changed starting from transmission production date 05/25/2010. For differentiation, refer to ➤ [12.2.1 st/2nd Gear Synchronization, Differentiating 3rd Gear Synchronization", page 406](#).

29 - Needle Bearing

- ❑ For 3rd gear

30 - 3rd Gear Assembly

- ❑ 3rd gear synchronization changed starting from transmission production date 05/25/2010. For differentiation, refer to ➤ [12.2.1 st/2nd Gear Synchronization, Differentiating 3rd Gear Synchronization", page 406](#).

31 - Inner Race/Tapered Roller Bearing

- ❑ Removing. Refer to ➤ [Fig. "Inner Race/Tapered Roller Bearing, Removing on Side facing Transmission Housing", page 403](#).
- ❑ Installing. Refer to ➤ [Fig. "Inner Race/Tapered Roller Bearing, Installing on Side facing Transmission Housing", page 403](#).

32 - Circlip

- ❑ Redetermine when replacing the tapered roller bearing -Item 31- ➤ [Item 31 \(page 396\)](#) and the output shaft -Item 6- ➤ [Item 6 \(page 394\)](#). Refer to ➤ [Fig. "Circlip, Determining", page 403](#).

33 - Outer Race/Tapered Roller Bearing

- ❑ Removing. Refer to ➤ [Fig. "Outer Race/Tapered Roller Bearing, Removing from Transmission Housing", page 404](#).
- ❑ Installing. Refer to ➤ [Fig. "Outer Race/Tapered Roller Bearing, Installing in Transmission Housing", page 404](#).

34 - Shim

- ❑ Selecting thickness. Refer to ➤ [t2.3 hrough 4th Gear Output Shaft, Adjusting", page 428](#).

35 - Transmission Housing

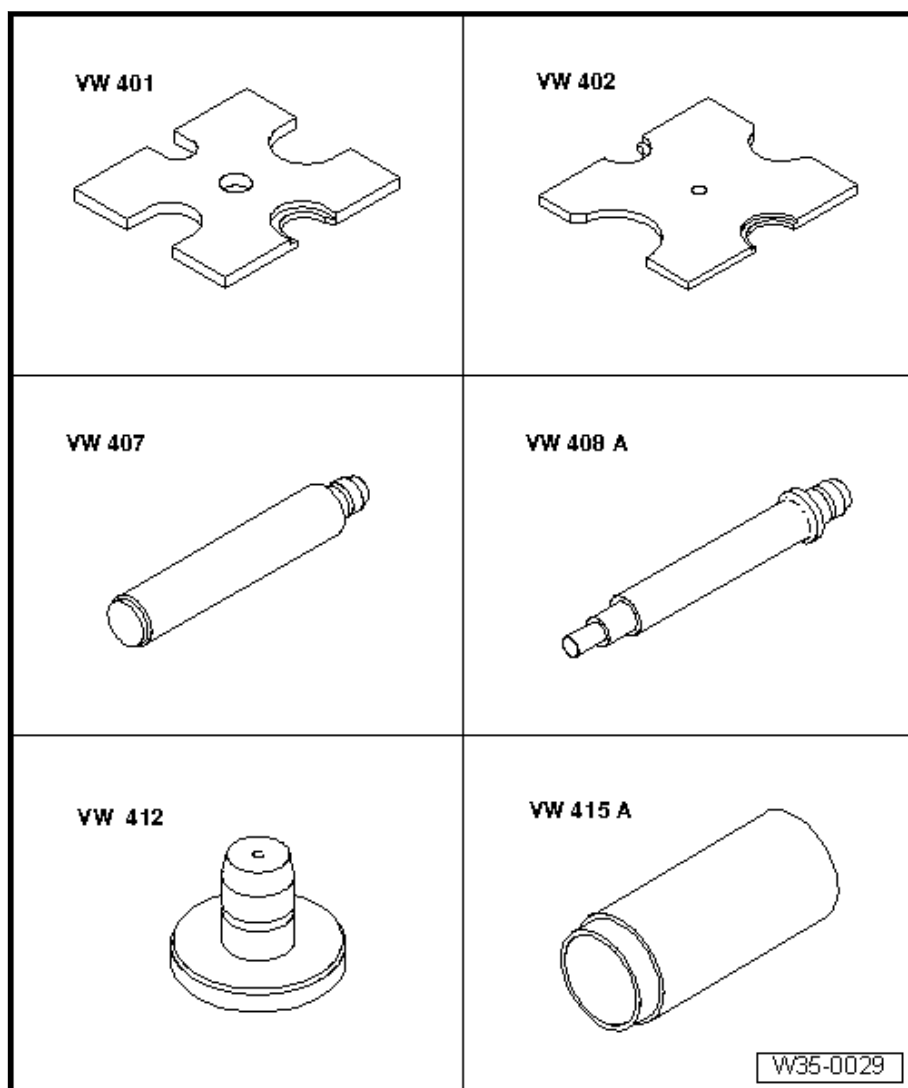
2.2 1st to 4th Gear Output Shaft, Disassembling and Assembling

The 1st/2nd gear synchronizing has been changed from transmission production date 10/26/2009. Refer to ➤ [12.2.1 st/2nd Gear Synchronization, Differentiating 3rd Gear Synchronization", page 406](#).

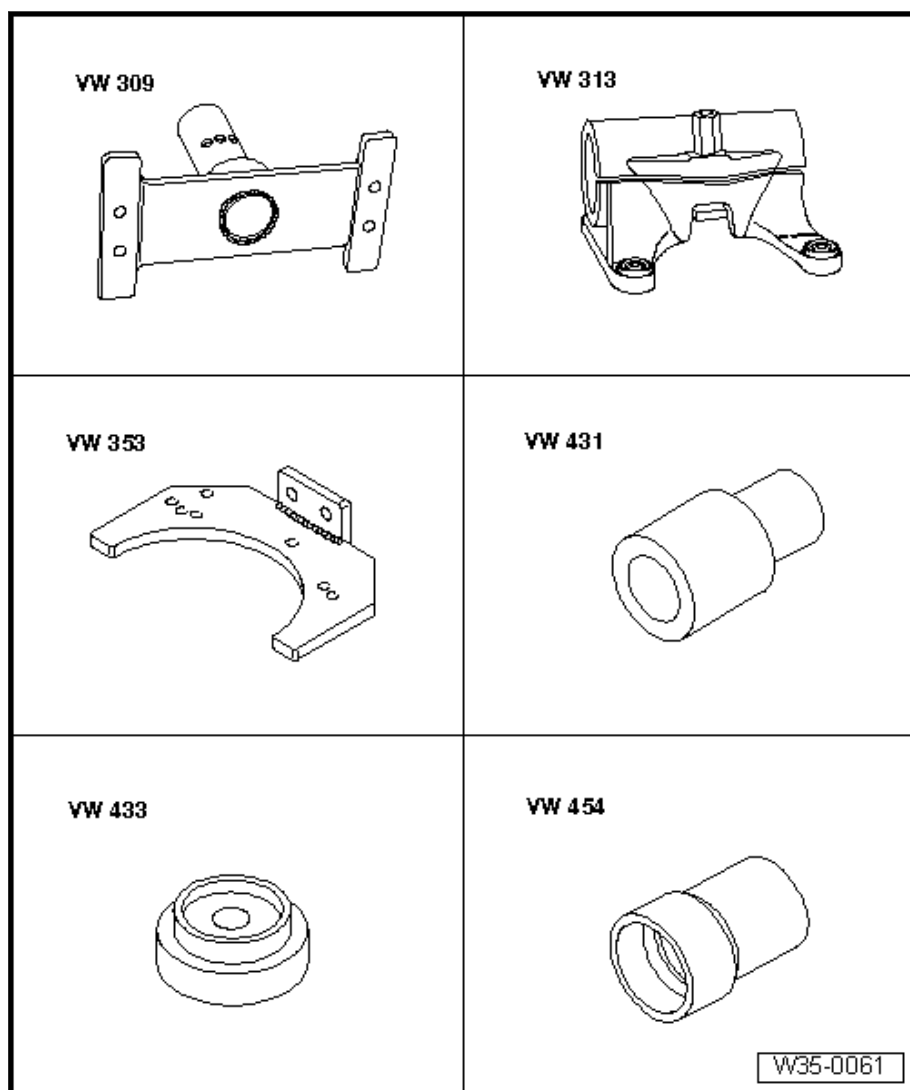
The 3rd gear synchronization has been changed from transmission production date 5/25/2010. To differentiate, refer to ➤ [12.2.1 st/2nd Gear Synchronization, Differentiating 3rd Gear Synchronization", page 406](#).



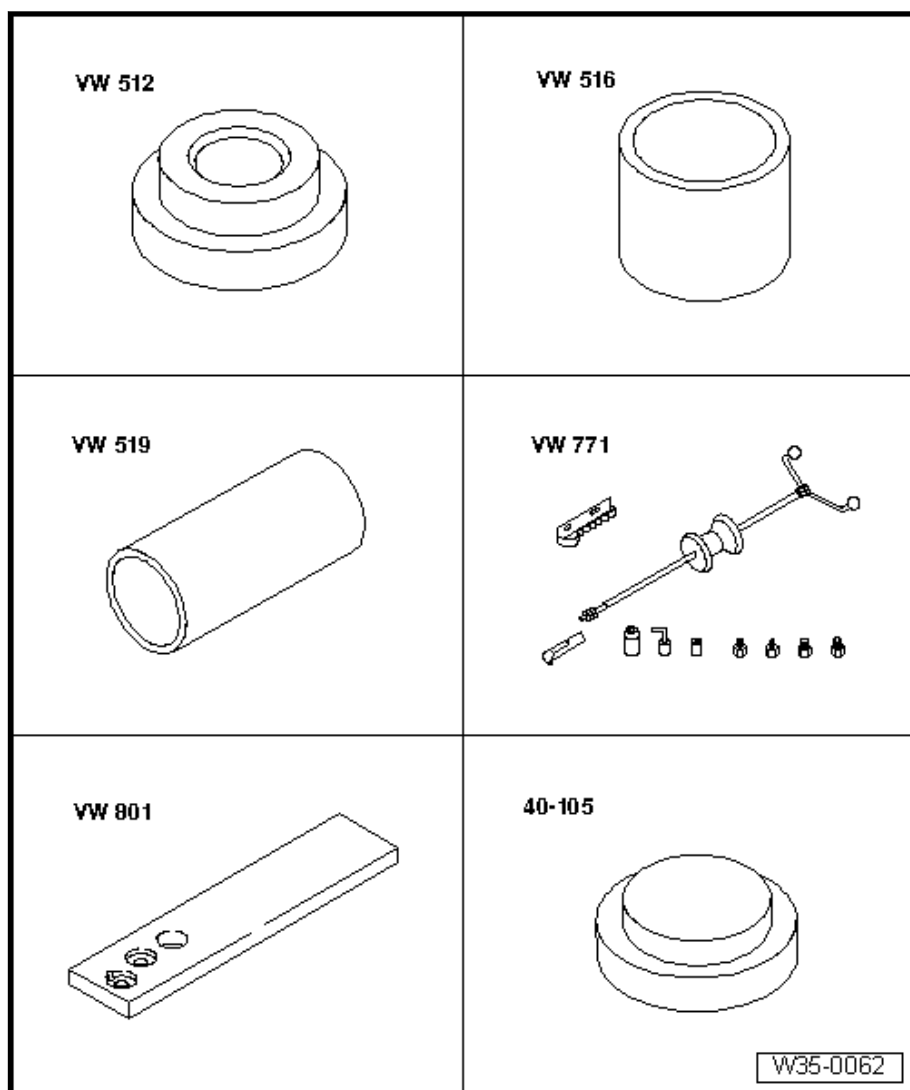
**Special tools and workshop
equipment required**



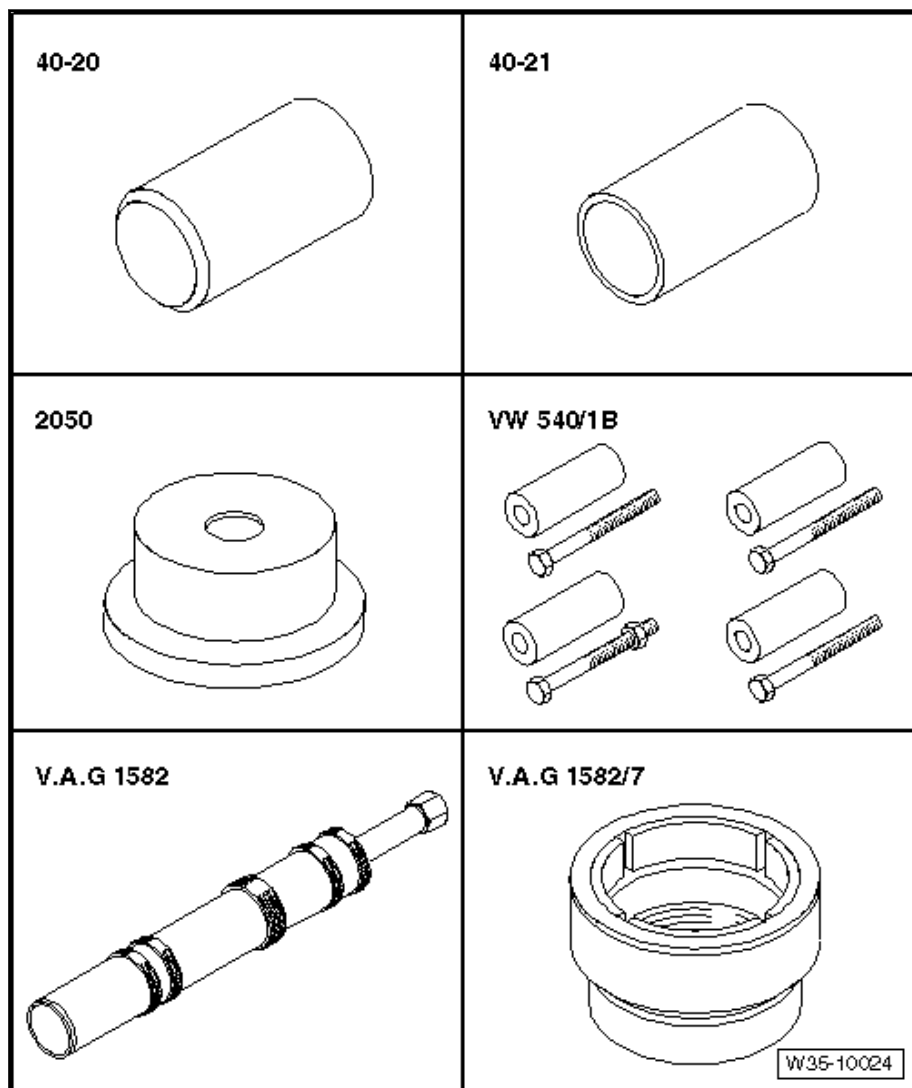
- ◆ Press Plate -VW 401-
- ◆ Press Plate -VW 402-
- ◆ Press Piece - Rod -VW 407-
- ◆ Press Piece - Rod -VW 408 A-
- ◆ Press Piece - Multiple Use -VW 412-
- ◆ Press Piece - 60mm -VW 415 A-



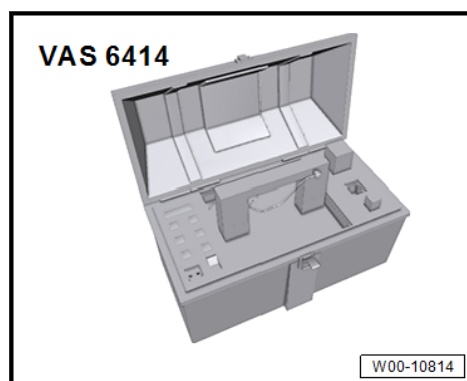
- ◆ Holding Plate -VW 309A-
- ◆ Holding Fixture -VW 313-
- ◆ Transmission Support -VW 353-
- ◆ Press Piece - Multiple Use -VW 431-
- ◆ Press Piece - Multiple Use -VW 433-
- ◆ Press Piece - Multiple Use -VW 454-



- ◆ Press Piece - Multiple Use -VW 512-
- ◆ Press Piece - 42mm -VW 516-
- ◆ Press Piece - Multiple Use -VW 519-
- ◆ Slide Hammer Set -VW 771-
- ◆ Crankshaft Holding Fixture -VW 801-
- ◆ Press Piece - Multiple Use -40 - 105-

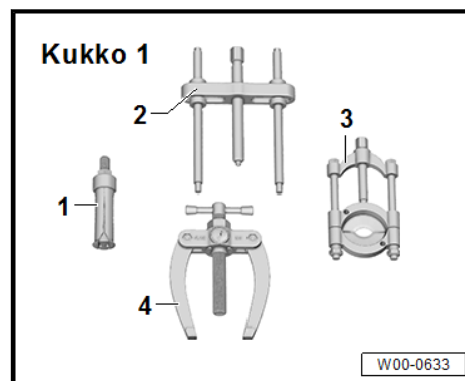


- ◆ Bearing Installer - Multiple Use -40 - 20-
- ◆ Bearing Installer - Differential Bearing -40 - 21-
- ◆ Slide Hammer - Press Plate -2050-
- ◆ Holding Fixture - Spacers -VW 540/1 B-
- ◆ Puller - Taper Roller Bearing -V.A.G 1582-
- ◆ Puller - Taper Roller Bearing - Adapter 7 -V.A.G 1582/7-
- ◆ Inductive Heater -VAS 6414-



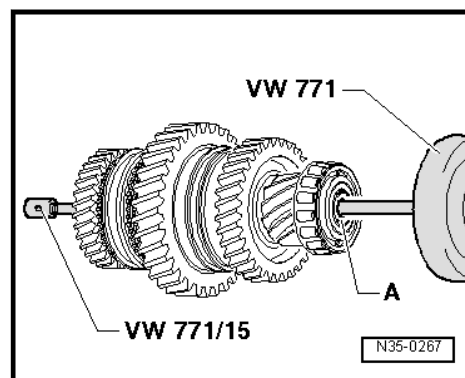


- ◆ -1- Internal Puller -VAS 251 615-

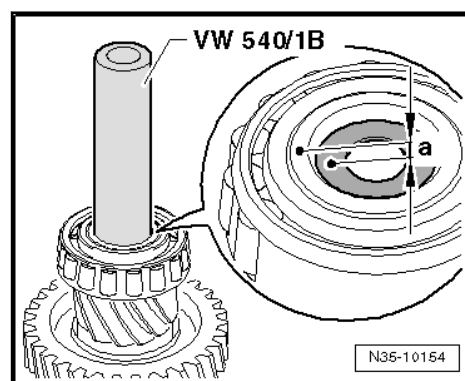


- ◆ -1- Puller - Roller Bearing (Kukko 21-8) -VAS6775-
- ◆ -2- Puller (Kukko 18/2) -VAS251419-
- ◆ -3- Splitter -VAS 251411-
- ◆ -4- Counter Support -VAS 251 623-

Dished Washer -A-, Removing from Output Shaft

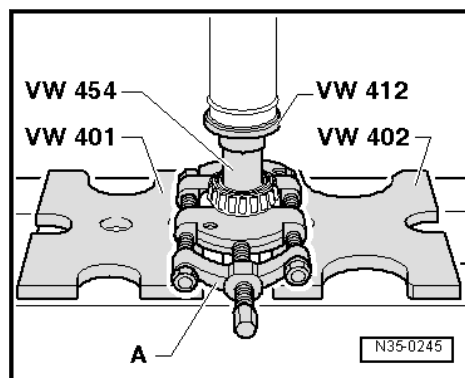


Dished Washer, Installing in Output Shaft



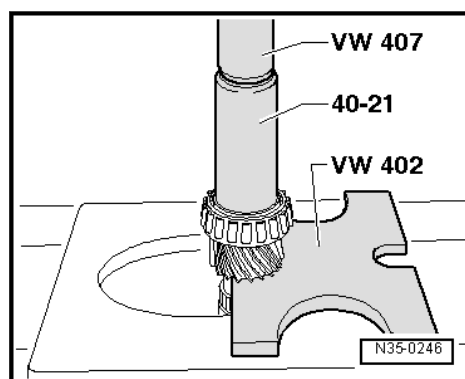
Dimension "a" = 2 mm

Inner Race/Tapered Roller Bearing, Removing on Side facing Clutch Housing

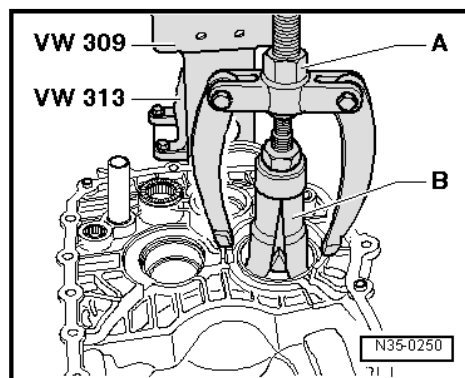


A - Separating Tool, for example, Splitter -VAS251411-

Inner Race/Tapered Roller Bearing, Installing on Side facing Clutch Housing



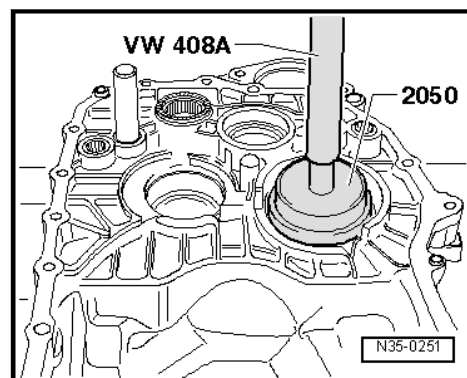
Outer Race/Tapered Roller Bearing, Removing from Clutch Housing



A - Counter Support, for example, Counter Support - VAS251623-

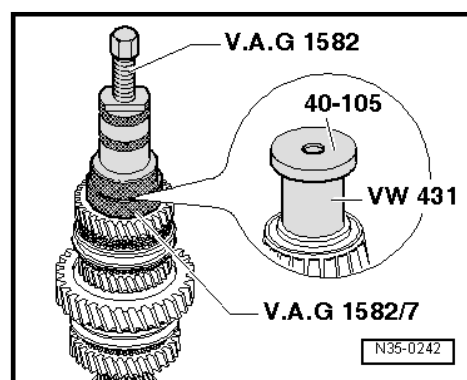
B - Internal Puller, for example, Puller - Roller Bearing - VAS6775-

Outer Race/Tapered Roller Bearing, Installing in Clutch Housing



- Support the clutch housing with the Bearing Installer - Multiple Use -40-20- directly under the bearing mount.

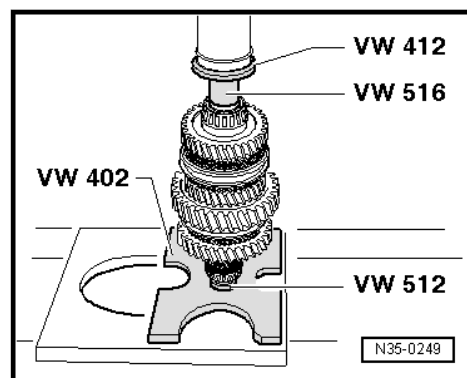
Inner Race/Tapered Roller Bearing, Removing on Side facing Transmission Housing



Before installing the Tapered Roller Bearing Puller:

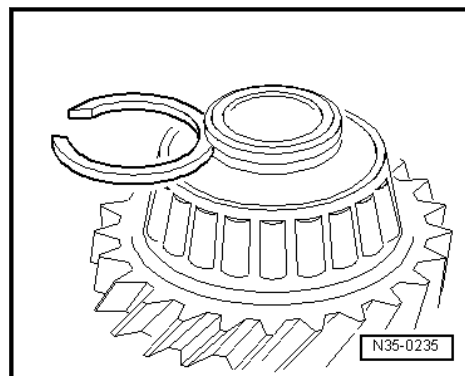
- Remove the circlip for the inner race/tapered roller bearing on the side facing the transmission housing.
- Place the Press Piece - Multiple Use -VW 431- in the output shaft and place the Press Piece - Multiple Use - 40-105- on top.

Inner Race/Tapered Roller Bearing, Installing on Side facing Transmission Housing



- Determine the correct circlip (refer to [Fig. "Circlip, Determining", page 403](#)) and install it.

Circlip, Determining



- Select and install the thickest circlip that will fit.



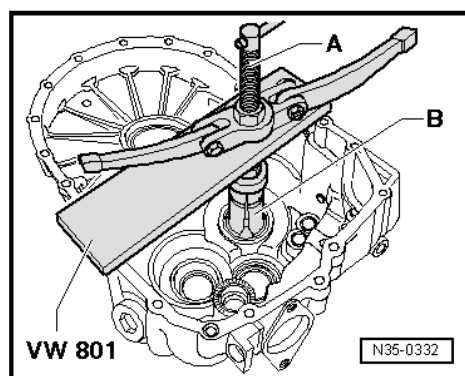
Note

Select the correct circlips using the ⇒ *Electronic Parts Catalog (ETKA)*.

The following circlips are available:

Thickness (mm)			
1.79	1.83	1.86	1.89
1.92	1.95	1.98	

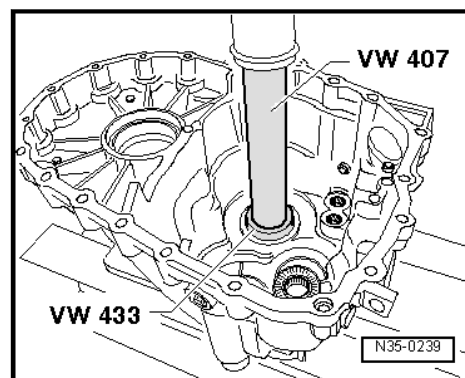
Outer Race/Tapered Roller Bearing, Removing from Transmission Housing



A - Counter Support, for example, Counter Support - VAS251623-

B - Internal Puller, for example, Internal Puller -VAS251615-

Outer Race/Tapered Roller Bearing, Installing in Transmission Housing



- Install the washer under the outer race.
- Support the transmission housing under the bearing mount using the Slide Hammer - Press Plate -2050-.

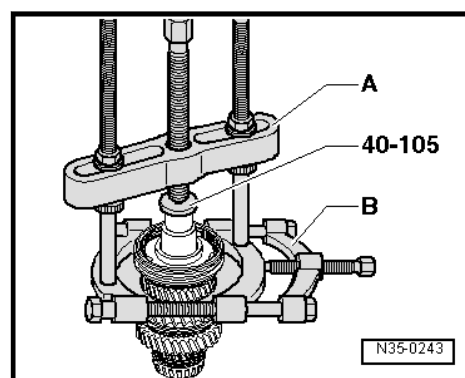
Output Shaft, Disassembling



Note

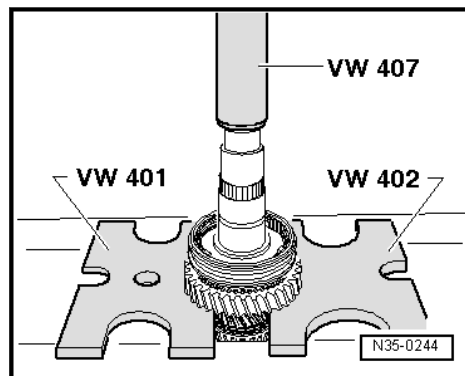
To remove the inner race/tapered roller bearing on the side facing the transmission housing, refer to ➤ Fig. “Inner Race/Tapered Roller Bearing, Removing on Side facing Transmission Housing”, page 403 .

3rd and 4th Gear Synchronizer Hub/Locking Collar, Removing with 4th Gear Wheel



- Remove the circlip beforehand.
- A - Puller, for example, Puller -VAS251419-
- B - Separating Tool, for example, Splitter -VAS251411-
- Remove the thrust washers for 1st and 4th gears ➤ [Item 19 \(page 395\)](#) and ➤ [Item 20 \(page 395\)](#) .
- Remove the 1st gear wheel ➤ [Item 18 \(page 395\)](#) .

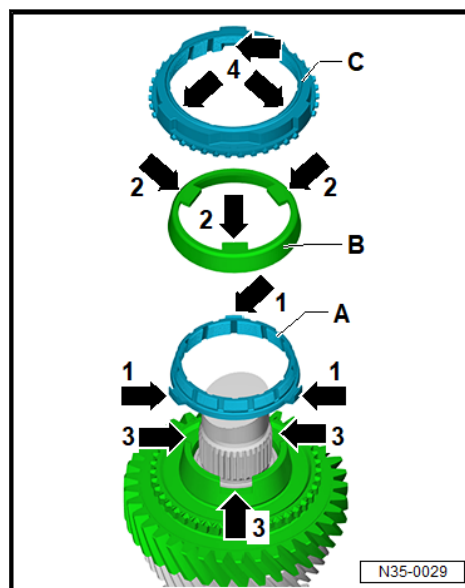
1st and 2nd Gear Locking Collar and Synchronizer Hub, Removing



After removing the circlip, remove the 2nd gear wheel and locking collar/synchronizer hub together.

2.2.1 Differentiating 1st/2nd Gear Synchronization, Differentiating 3rd Gear Synchronization

1st/2nd Gear Synchronization through Transmission Production Date 10/25/2009 and 3rd Gear Synchronization through Transmission Production Date 05/24/2010

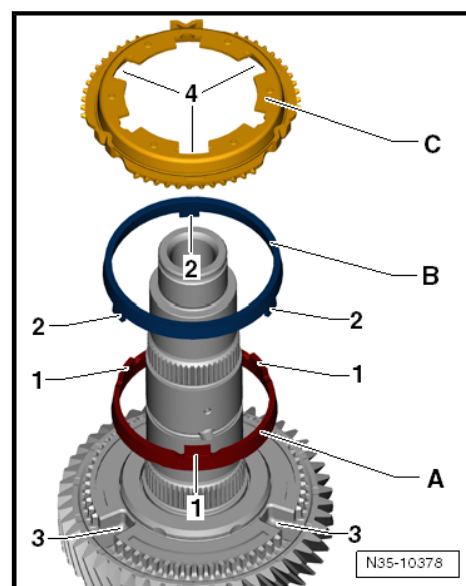


The synchronizer ring -C- and inner race -A- are made of brass. Outer race -B- made of steel.	Transmission production date	1st through 4th Gear Output Shaft, Assembly
1st/2nd gear synchronization	Through 10/25/2009	<u>⇒</u> <u>t2.2.2 through 4th Gear Output Shaft, Assembly, through Transmission Production Date 10/25/2009", page 408</u>



The synchronizer ring -C- and inner race -A- are made of brass. Outer race -B- made of steel.	Transmission production date	1st through 4th Gear Output Shaft, Assembling
3rd gear synchronization	Through 5/24/2010	[⇒] t2.2.3 through 4th Gear Output Shaft, Assembling, from Transmission Production Date 10/26/2009 through Transmission Production Date 05/24/2010", page 414

1st/2nd gear Synchronization from Transmission Production Date 10/26/2009 and 3rd Gear Synchronization from Transmission Production Date 05/25/2010

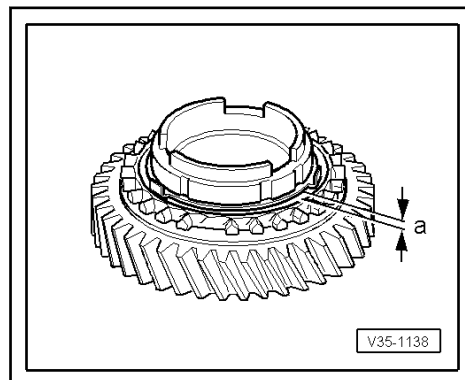




The synchronizer ring -C-, outer race -B- and inner race -A- are made of steel.	Transmission production date	1st through 4th Gear Output Shaft, Assembling
1st/2nd gear synchronization	From 10/26/2009	Refer to ⇒ <u>t2.2.3 through 4th Gear Output Shaft, Assembling, from Transmission Production Date 10/26/2009 through Transmission Production Date 05/24/2010", page 414</u> or ⇒ <u>t2.2.4 through 4th Gear Output Shaft, Assembling, from Transmission Production Date 05/25/2010", page 421</u> .
3rd gear synchronization	From 5/25/2010	⇒ <u>t2.2.4 through 4th Gear Output Shaft, Assembling, from Transmission Production Date 05/25/2010", page 421</u> .

2.2.2 1st through 4th Gear Output Shaft, Assembling, through Transmission Production Date 10/25/2009

Checking the inner race for 1st, 2nd and 3rd gear for wear

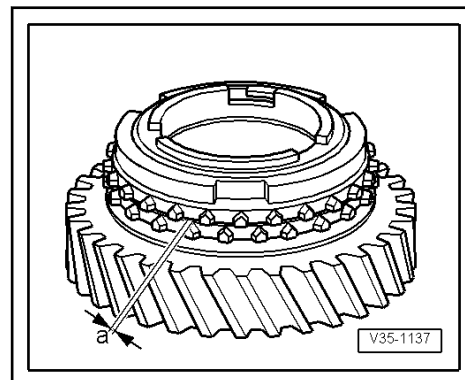


- Check the tabs on the inner race for scoring.
- Push the inner race onto the gear assembly taper and then measure the gap dimension -a- with a feeler gauge.



Gap dimension -a-	Installed dimension	Wear limit
1st 2nd and 3rd gear	0.75 to 1.25 mm	0.3 mm

Checking the 1st, 2nd and 3rd gear synchronizer rings for wear

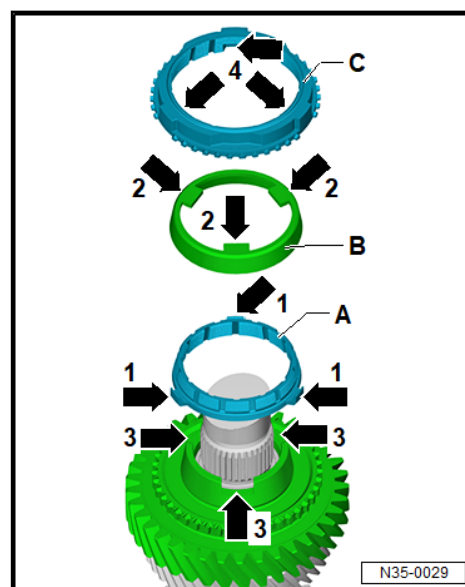


- Install the synchronizer ring, outer race and inner race onto taper of the gear wheel and then measure the gap dimension -a- with a feeler gauge.

Gap dimension -a-	Installed dimension	Wear limit
1st 2nd and 3rd gear	1.2 to 1.8 mm	0.5 mm

- Install the 2nd gear wheel with the needle bearing.

2nd Gear Synchronizer Ring, Inner Race and Outer Race Installation Position



- Check the tabs -arrows 1- and -arrows 2- for wear grooves.
- Replace the inner race, the outer race and the synchronizer ring if they have wear grooves or scoring.
- Install the inner race -A- on the 2nd gear wheel.

The angled tabs -arrows 1- face the outer race -B-.

- Install the outer race -B-.

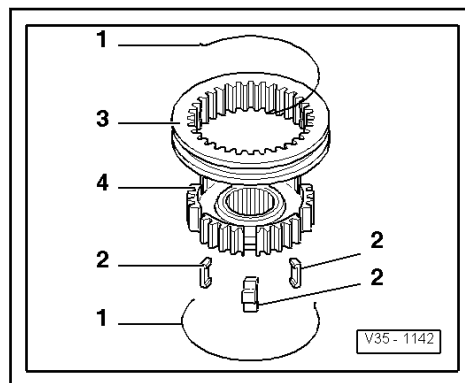


The tabs -2 arrows- must engage in the gear wheel cut-outs
-3 arrows-.

- Install the synchronizer ring -C-.

The cut-outs -4 arrows- must engage in the tabs -1 arrows- on
the inner race -A-.

1st/2nd Gear and 3rd/4th Gear Locking Collar and Synchronizer Hub, Disassembling and Assembling



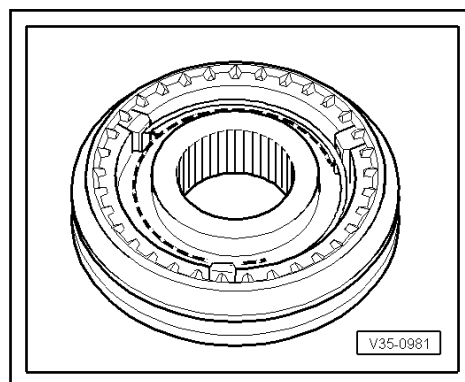
- 1 - Spring
- 2 - Locking Piece
- 3 - Locking Collar
- 4 - Synchronizer Hub

- Slide the locking collar over the synchronizer hub.

For the 3rd and 4th gear, the wide collar on the synchronizer
hub and the locking collar face in one direction.

The notches for the locking pieces on the synchronizer hub and
locking collar must line up with each other.

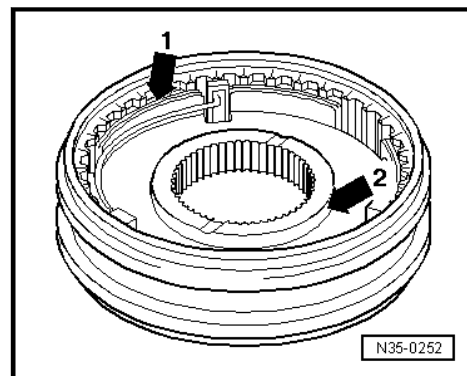
1st/2nd Gear and 3rd/4th Gear Locking Collar/Synchronizer Hub, Assembling



The locking collar is pushed over the synchronizer hub.

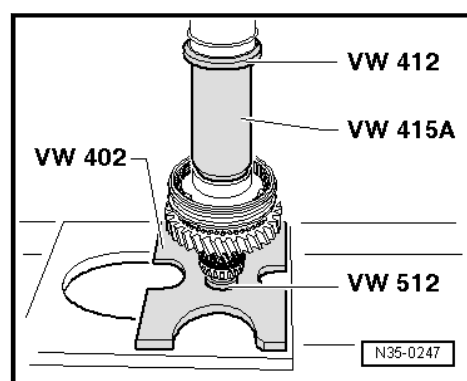
- Install the locking pieces and springs offset by 120°. The
angled end of the spring must engage into the hollow locking
piece.

1st and 2nd Gear Locking Collar/Synchronizer Hub Installation Position



The identification groove -arrow 1- and the narrow collar -arrow 2- on the synchronizer hub face the 1st gear.

1st and 2nd Gear Locking Collar/Synchronizer Hub, Installing

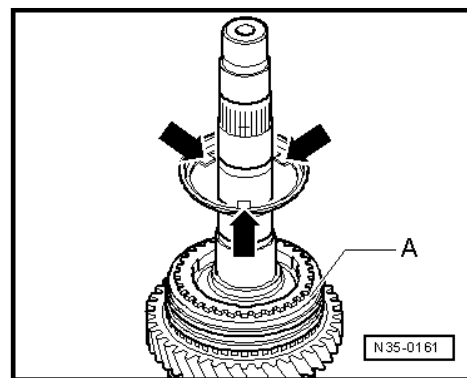


Turn the synchronizer ring so that the grooves line up with the locking pieces.

- Install the circlip.

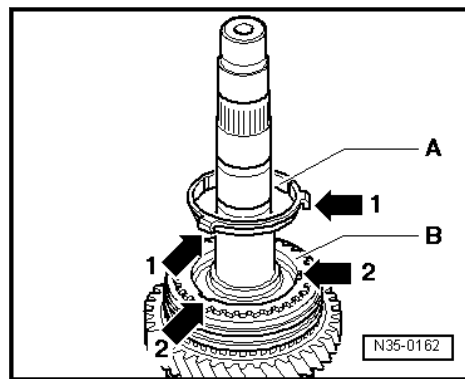
Install the 1st gear synchronizer ring

1st Gear Outer Race Installation Position



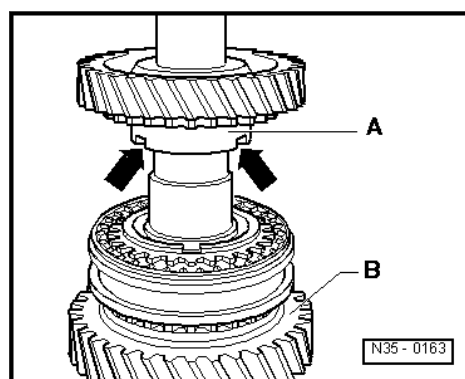
The tabs -arrows- face the synchronizer hub/locking collar -A-.

Synchronizer Ring -A- (1st Gear Inner Race) Installation Position



The tabs -arrows 1- engage into the holes -arrows 2- inside the synchronizer ring -B-.

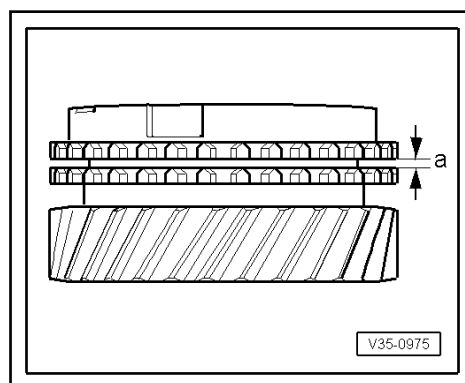
1st Gear Wheel with Needle Bearing, Installing



The higher collar -A- faces 2nd gear -B-. The cut-outs in the collar -arrows- engage into outer race tabs. Refer to [⇒ Fig. "1st Gear Outer Race Installation Position", page 411](#).

- Install the thrust washers for 1st and 4th gears [⇒ Item 19 \(page 395\)](#) and [⇒ Item 20 \(page 395\)](#).
- Install the 4th gear with the needle bearing.

4th Gear Synchronizer Ring, Checking for Wear

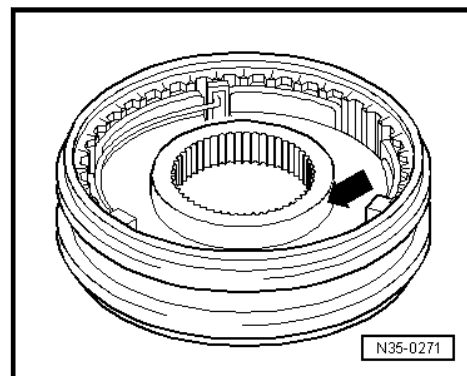


- Push the synchronizer ring onto the gear assembly taper and then measure the gap dimension -a- with a feeler gauge.

Gap dimension -a-	Installed dimension	Wear limit
4th Gear	1.0 to 1.7 mm	0.5 mm

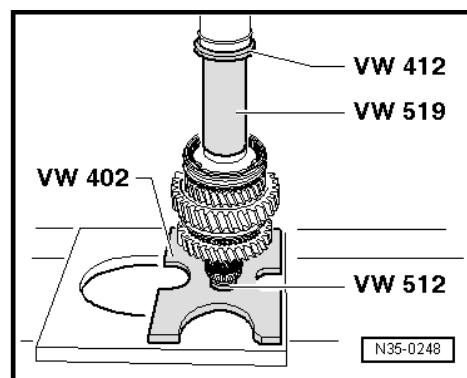


3rd and 4th Gear Locking Collar/Synchronizer Hub Installation Position



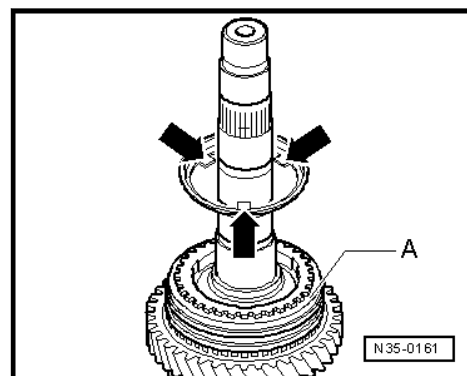
The wider collar on the synchronizer hub -arrow- faces the 3rd gear.

Synchronizer Hub with 3rd and 4th Gear Locking Collar, Installing



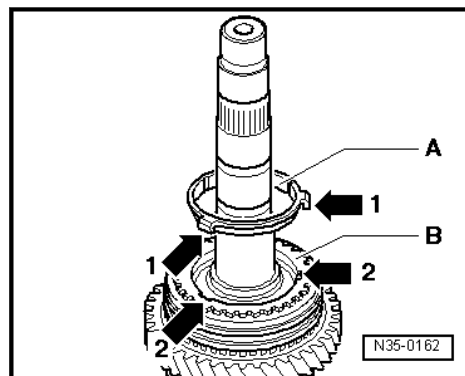
- Turn the synchronizer ring so that the grooves line up with the locking pieces.
- Install the circlip.
- Install the 3rd gear synchronizer ring on the 3rd and 4th gear synchronizer hub/locking collar.

3rd Gear Outer Race Installation Position



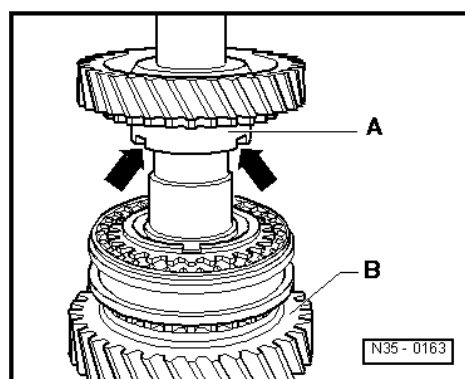
The tabs -arrows- face the synchronizer hub/locking collar -A-.

Synchronizer Ring -A- (3rd Gear Inner Race) Installation Position



The tabs -arrows 1- engage into the holes -arrows 2- inside the synchronizer ring -B-.

3rd Gear Wheel Installation Position



The higher collar -A- faces 4th gear -B-. The cut-outs in the collar -arrows- engage into outer race tabs. Refer to ➤ [Fig. "1st Gear Outer Race Installation Position", page 411](#).

- Install the 3rd gear with the needle bearing.

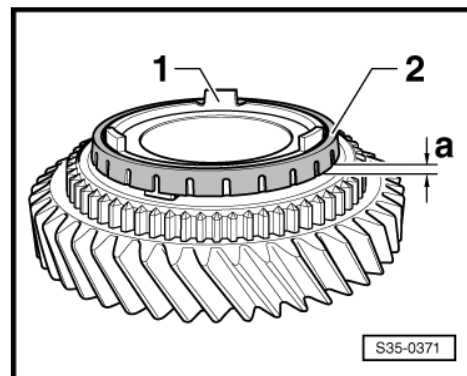


Note

- ◆ To install the inner race/tapered roller bearing, refer to ➤ [Fig. "Inner Race/Tapered Roller Bearing, Installing on Side facing Transmission Housing", page 403](#).
- ◆ To determine the correct circlip for the inner race/tapered roller bearing, refer to ➤ [Fig. "Circlip, Determining", page 403](#).

2.2.3 1st through 4th Gear Output Shaft, Assembling, from Transmission Production Date 10/26/2009 through Transmission Production Date 05/24/2010

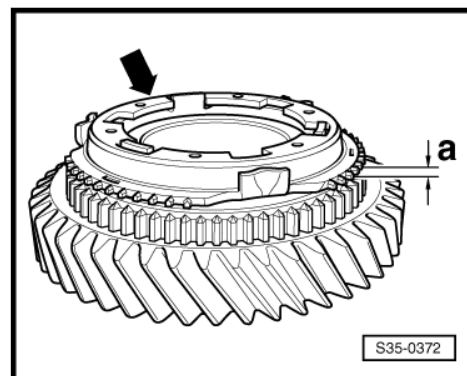
Checking the inner contact surface for wear on the 1st gear outer race and on the 2nd gear outer race



- Install the inner race -1- on the cone on the gear wheel.
- Install the outer race -2- on the cone on the inner race. Use a feeler gauge to measure the gap dimension -a- at three places with an offset of 120°.
- Note the average value.

Wear limit dimension -a-	
1st gear and 2nd gear	0.4 mm

Checking the outer contact surface for wear on the 1st gear outer race and on the 2nd gear outer race

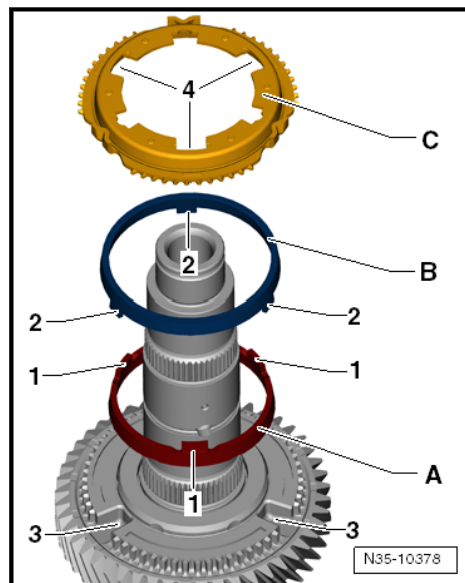


- Check the inner contact surface on the synchronizer ring -arrow- for scoring and radial wear. Replace if necessary.
- Install the inner race, the outer race and the synchronizer ring on the cone of the inner race.
- Press the synchronizer ring with the outer race while turning it at the same time so that synchronizer rings sit correctly.
- Use a feeler gauge to measure the gap dimension -a- at three places with an offset of 120°.
- Note the average value.

Wear limit dimension -a-	
1st gear and 2nd gear	0.8 mm

- Install the 2nd gear wheel with the needle bearing.

2nd Gear Synchronizer Ring, Inner Race and Outer Race, Installing



– Install the inner race -A- in the gear wheel.

The tabs -1- face away from the gear wheel.

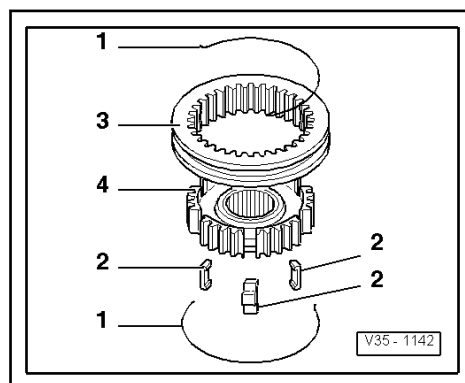
– Install the outer race -B-.

The tabs -2- must engage in the gear wheel cut-outs -3-.

– Install the synchronizer ring -C-.

The larger openings -4- lock in the tabs -1- on the inner race -A-.

1st/2nd Gear and 3rd/4th Gear Locking Collar and Synchronizer Hub, Disassembling and Assembling



1 - Spring

2 - Locking Piece

3 - Locking Collar

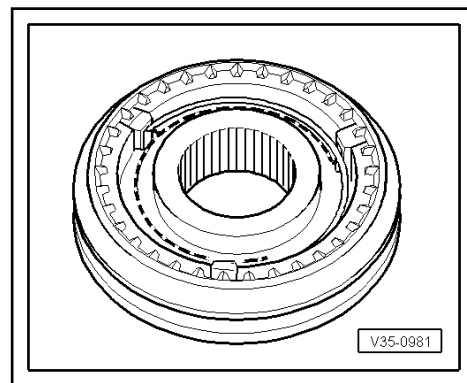
4 - Synchronizer Hub

– Slide the locking collar over the synchronizer hub.

For the 3rd and 4th gear, the wide collar on the synchronizer hub and the locking collar face in one direction.

The notches for the locking pieces on the synchronizer hub and locking collar must line up with each other.

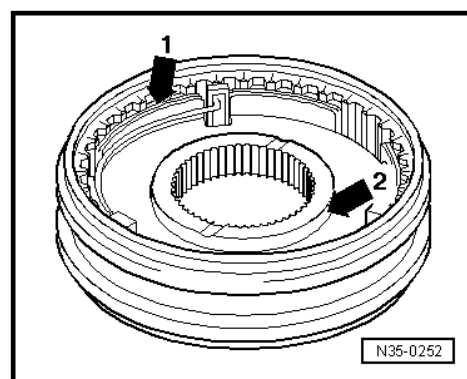
1st/2nd Gear and 3rd/4th Gear Locking Collar/Synchronizer Hub, Assembling



The locking collar is pushed over the synchronizer hub.

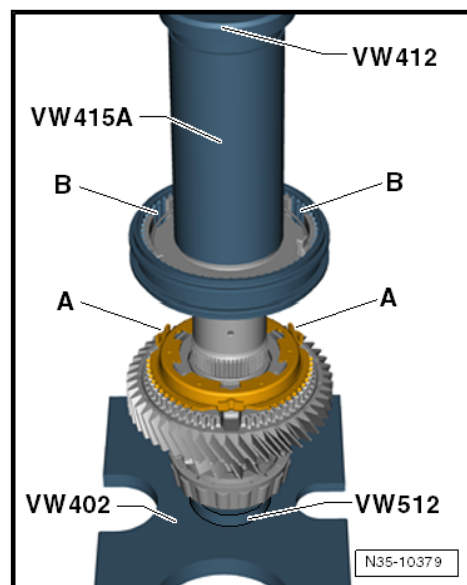
- Install the locking pieces and springs offset by 120°. The angled end of the spring must engage into the hollow locking piece.

1st and 2nd Gear Locking Collar/Synchronizer Hub Installation Position



The identification groove -arrow 1- and the narrow collar -arrow 2- on the synchronizer hub face the 1st gear.

1st and 2nd Gear Locking Collar/Synchronizer Hub, Installing

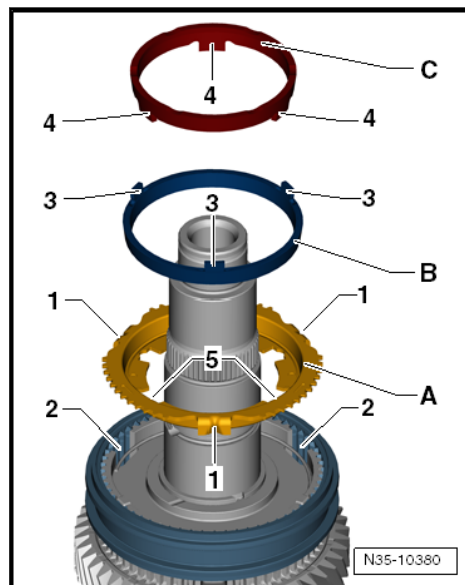


The pins -A- on the synchronizer ring lock into the recesses -B- in the synchronizer hub.

- Install the circlip.

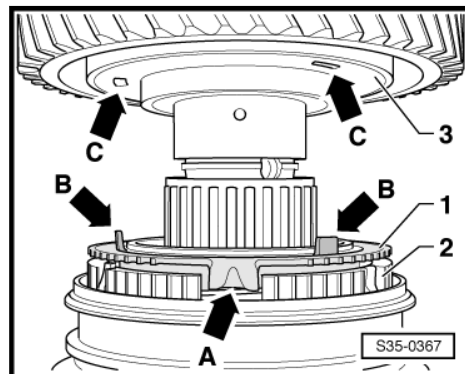


1st Gear Inner Race, Outer Race and Synchronizer Ring, Installing



- Install the synchronizer ring -A- in the synchronizer hub.
The tabs -1- lock in the openings -2- in the synchronizer hub.
- Install the outer race -B- in the synchronizer ring.
The tabs -3- face away from the synchronizer ring.
- Install the inner race -C- in the outer race.
The tabs -4- lock in the larger openings -5- of the synchronizer ring -A-.

1st Gear Wheel with Needle Bearing, Installing

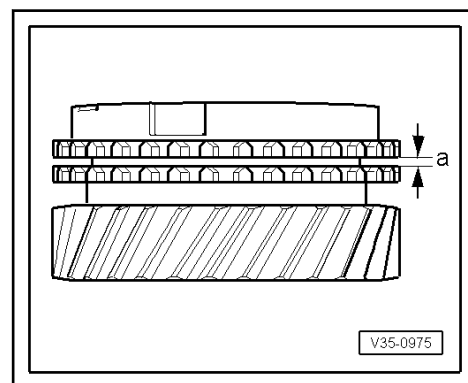


- The synchronizer ring -1- and the tabs -arrow A- are inside the openings in the synchronizer hub -2-.

The pins -B arrows- in the outer race lock in the recesses -C arrows- in the gear wheel -3-.

- Install the thrust washers for 1st and 4th gears ➤ [Item 19 \(page 395\)](#) and ➤ [Item 20 \(page 395\)](#) .
- Install the 4th gear with the needle bearing.

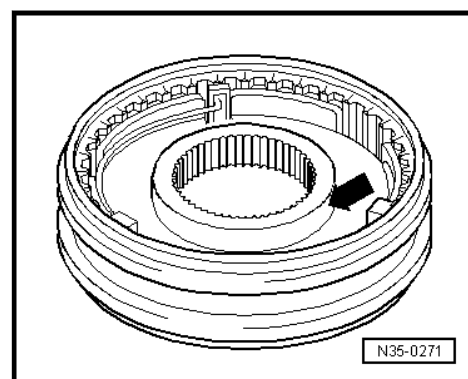
4th Gear Synchronizer Ring, Checking for Wear



- Push the synchronizer ring onto the gear assembly taper and then measure the gap dimension -a- with a feeler gauge.

Gap dimension -a-	Installed dimension	Wear limit
4th Gear	1.0 to 1.7 mm	0.5 mm

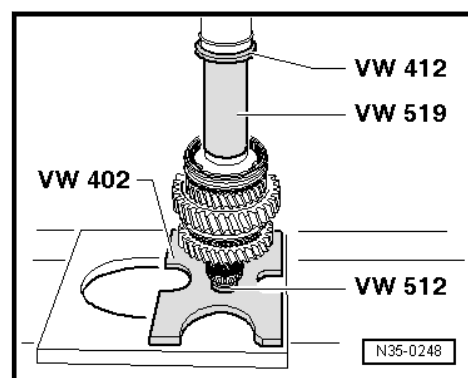
3rd and 4th Gear Locking Collar/Synchronizer Hub Installation Position



The wider collar on the synchronizer hub -arrow- faces the 3rd gear.

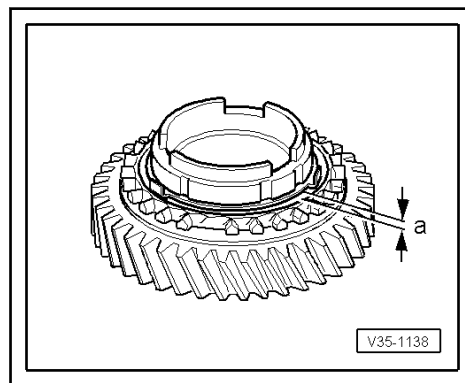
- Place the 4th gear synchronizer ring on the 4th gear wheel.

Synchronizer Hub with 3rd and 4th Gear Locking Collar, Installing



- Turn the synchronizer ring so that the grooves line up with the locking pieces.
- Install the circlip.

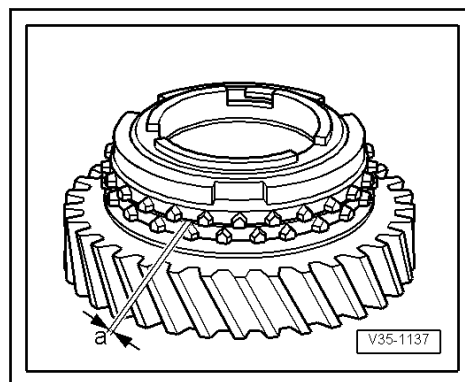
Checking the 3rd gear inner race for wear



- Push the inner race onto the gear assembly taper and then measure the gap dimension -a- with a feeler gauge.

Gap dimension -a-	Installed dimension	Wear limit
3rd Gear	0.75 to 1.25 mm	0.3 mm

Checking synchronizer ring for 3rd gear for wear

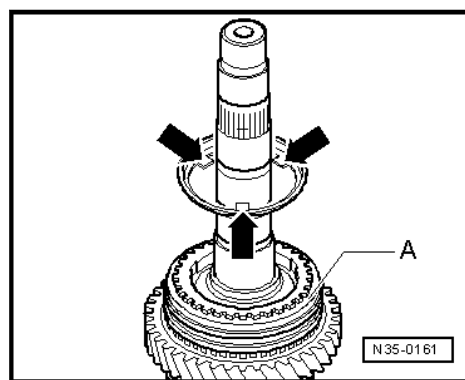


- Install the synchronizer ring, outer race and inner race onto taper of the gear wheel and then measure the gap dimension -a- with a feeler gauge.

Gap dimension -a-	Installed dimension	Wear limit
3rd Gear	1.2 to 1.8 mm	0.5 mm

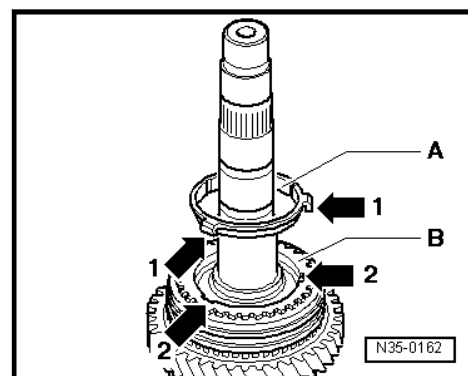
- Install the 3rd gear synchronizer ring on the 3rd and 4th gear synchronizer hub/locking collar.

3rd Gear Outer Race Installation Position



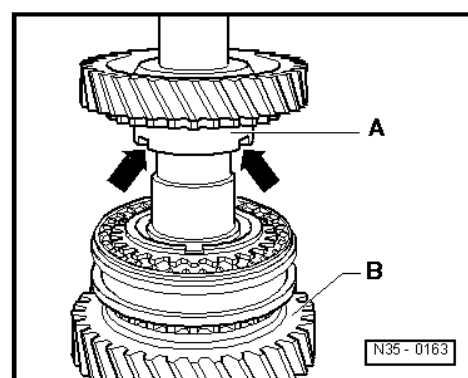
The tabs -arrows- face the synchronizer hub/locking collar -A-.

Synchronizer Ring -A- (3rd Gear Inner Race) Installation Position



The tabs -arrows 1- engage into the holes -arrows 2- inside the synchronizer ring -B-.

3rd Gear Wheel Installation Position



The higher collar -A- faces 4th gear -B-. The cut-outs in the collar -arrows- engage into outer race tabs. Refer to ➤ [Fig. "1st Gear Outer Race Installation Position", page 411](#) .

- Install the 3rd gear with the needle bearing.

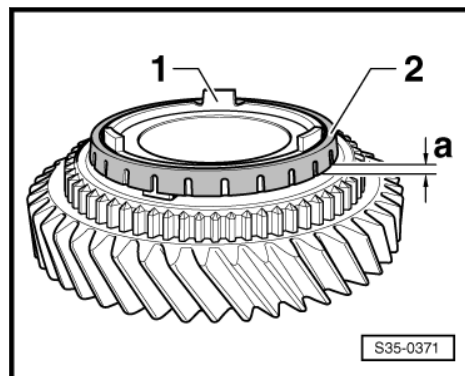


Note

- ◆ To install the inner race/tapered roller bearing, refer to ➤ [Fig. "Inner Race/Tapered Roller Bearing, Installing on Side facing Transmission Housing", page 403](#) .
- ◆ To determine the correct circlip for the inner race/tapered roller bearing, refer to ➤ [Fig. "Circlip, Determining", page 403](#) .

2.2.4 1st through 4th Gear Output Shaft, Assembling, from Transmission Production Date 05/25/2010

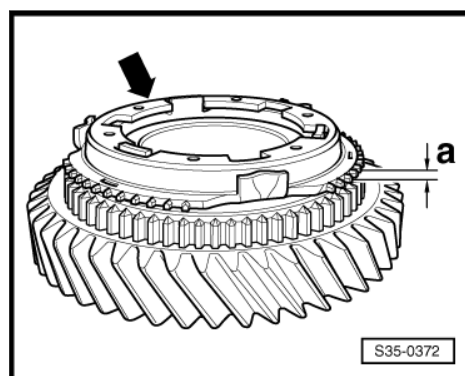
Inner Friction Surface on 1st Gear Outer Race, 2nd Gear Outer Race and 3rd Gear Outer Race, Checking for Wear



- Install the inner race -1- on the cone on the gear wheel.
- Install the outer race -2- on the cone on the inner race. Use a feeler gauge to measure the gap dimension -a- at three places with an offset of 120°.
- Note the average value.

Wear limit dimension -a-	
1st gear, 2nd gear, and 3rd gear	0.4 mm

Outer Friction Surface on 1st Gear Outer Race, 2nd Gear Outer Race and 3rd Gear Outer Race, Checking for Wear

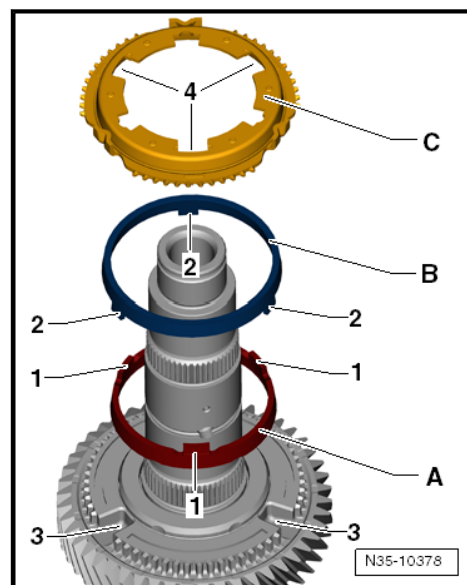


- Check the inner contact surface on the synchronizer ring -arrow- for scoring and radial wear. Replace if necessary.
- Install the inner race, the outer race and the synchronizer ring on the cone of the inner race.
- Press the synchronizer ring with the outer race while turning it at the same time so that synchronizer rings sit correctly.
- Use a feeler gauge to measure the gap dimension -a- at three places with an offset of 120°.
- Note the average value.

Wear limit dimension -a-	
1st gear, 2nd gear, and 3rd gear	0.8 mm

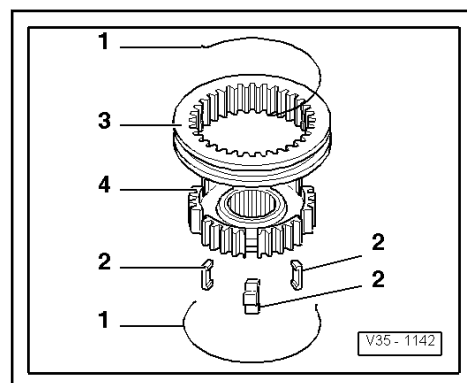
- Install the 2nd gear wheel with the needle bearing.

2nd Gear Synchronizer Ring, Inner Race and Outer Race, Installing



- Install the inner race -A- in the gear wheel.
The tabs -1- face away from the gear wheel.
- Install the outer race -B-.
- The tabs -2- must engage in the gear wheel cut-outs -3-.
- Install the synchronizer ring -C-.
- The larger openings -4- lock in the tabs -1- on the inner race -A-.

1st/2nd Gear and 3rd/4th Gear Locking Collar and Synchronizer Hub, Disassembling and Assembling

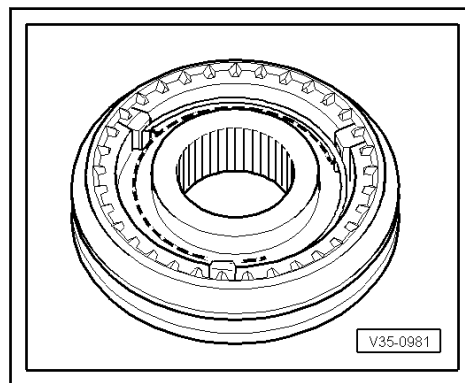


- 1 - Spring
- 2 - Locking Piece
- 3 - Locking Collar
- 4 - Synchronizer Hub
- Slide the locking collar over the synchronizer hub.

For the 3rd and 4th gear, the wide collar on the synchronizer hub and the locking collar face in one direction.

The notches for the locking pieces on the synchronizer hub and locking collar must line up with each other.

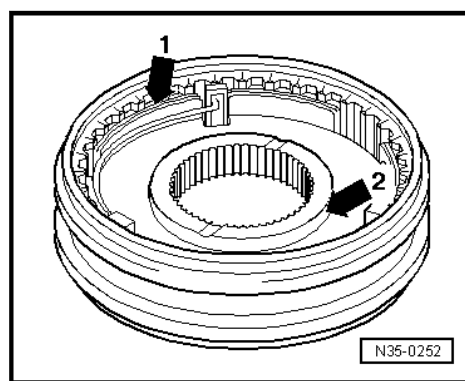
1st/2nd Gear and 3rd/4th Gear Locking Collar/Synchronizer Hub, Assembling



The locking collar is pushed over the synchronizer hub.

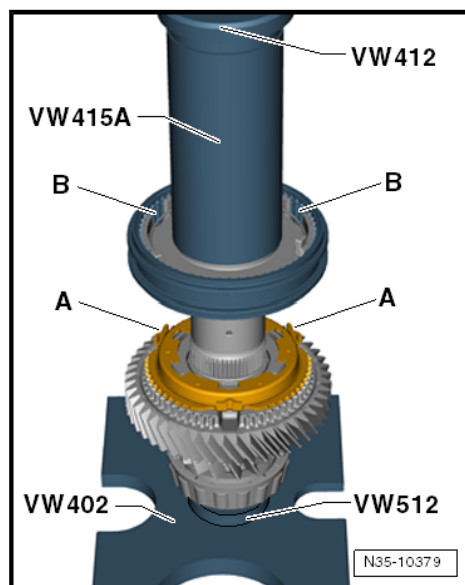
- Install the locking pieces and springs offset by 120°. The angled end of the spring must engage into the hollow locking piece.

1st and 2nd Gear Locking Collar/Synchronizer Hub Installation Position



The identification groove -arrow 1- and the narrow collar -arrow 2- on the synchronizer hub face the 1st gear.

1st and 2nd Gear Locking Collar/Synchronizer Hub, Installing

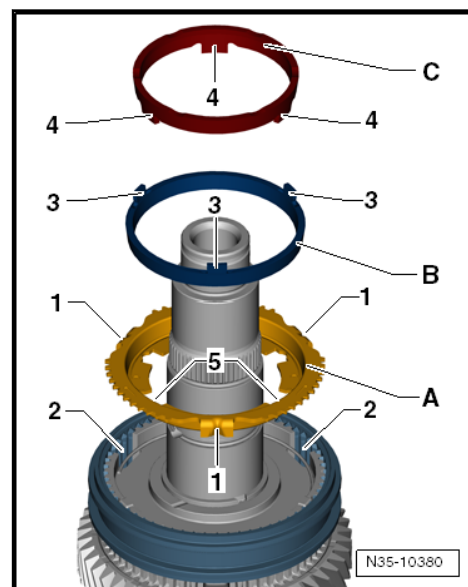


The pins -A- on the synchronizer ring lock into the recesses -B- in the synchronizer hub.

- Install the circlip.

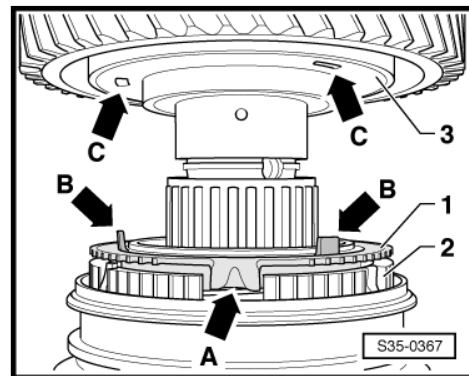


1st Gear Inner Race, Outer Race and Synchronizer Ring, Installing



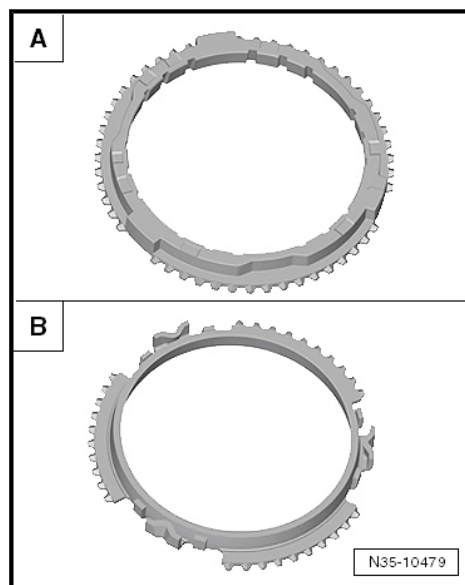
- Install the synchronizer ring -A- in the synchronizer hub.
The tabs -1- lock in the openings -2- in the synchronizer hub.
- Install the outer race -B- in the synchronizer ring.
The tabs -3- face away from the synchronizer ring.
- Install the inner race -C- in the outer race.
The tabs -4- lock in the larger openings -5- of the synchronizer ring -A-.

1st Gear Wheel with Needle Bearing, Installing



- The synchronizer ring -1- and the tabs -arrow A- are inside the openings in the synchronizer hub -2-.
- The pins -B arrows- in the outer race lock in the recesses -C arrows- in the gear wheel -3-.
- Install the thrust washers for 1st and 4th gears ➤ [Item 19 \(page 395\)](#) and ➤ [Item 20 \(page 395\)](#) .
- Install the 4th gear with the needle bearing.

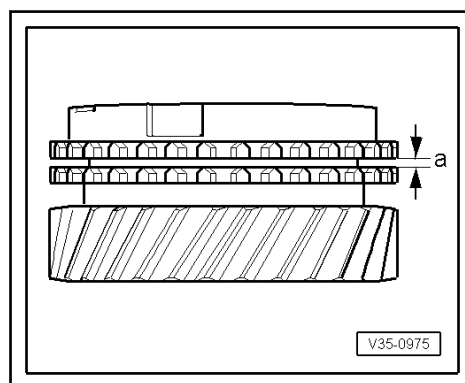
4th Gear Synchronizer Ring, Checking for Wear



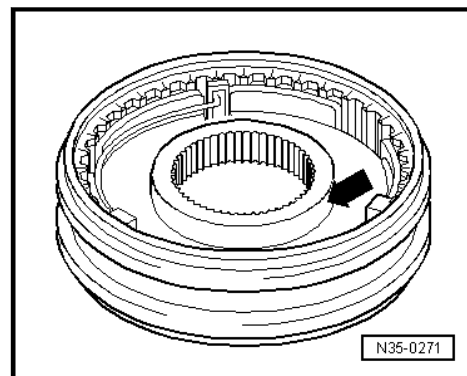
-A- = brass synchronizer ring		
Gap dimension -a-	Installed dimension	Wear limit
4th Gear	1.0 to 1.7 mm	0.5 mm

-B- = steel synchronizer ring		
Gap dimension -a-	Installed dimension	Wear limit
4th Gear	1.3 to 2.4 mm	0.8 mm

- Push the synchronizer ring onto the gear assembly taper and then measure the gap dimension -a- with a feeler gauge.



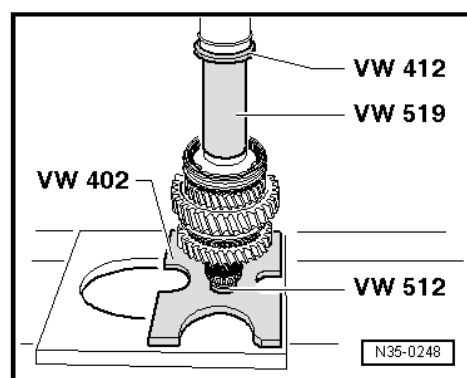
3rd and 4th Gear Locking Collar/Synchronizer Hub Installation Position



The wider collar on the synchronizer hub -arrow- faces the 3rd gear.

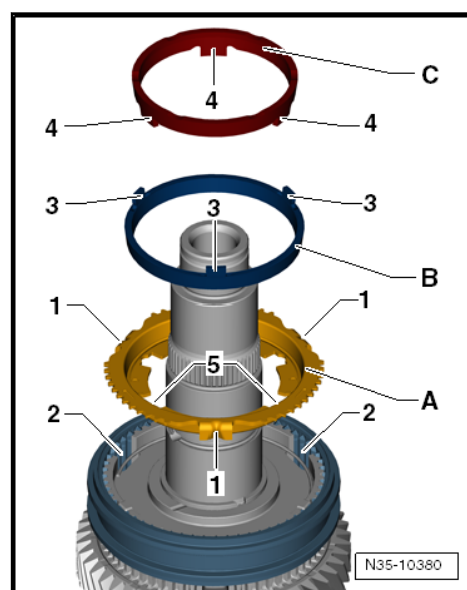
- Place the 4th gear synchronizer ring on the 4th gear wheel.

Synchronizer Hub with 3rd and 4th Gear Locking Collar, Installing



- Turn the synchronizer ring so that the grooves line up with the locking pieces.
- Install the circlip.

3rd Gear Inner Race, Outer Race and Synchronizer Ring, Installing



- Install the synchronizer ring -A- in the synchronizer hub.
- The tabs -1- lock in the openings -2- in the synchronizer hub.



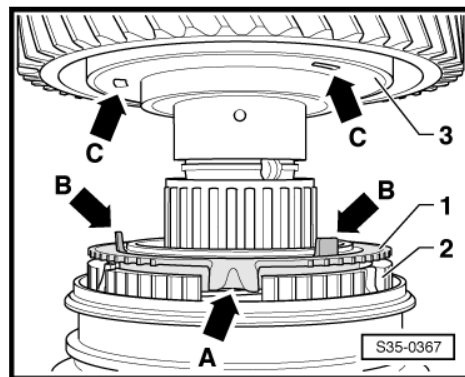
- Install the outer race -B- in the synchronizer ring.

The tabs -3- face away from the synchronizer ring.

- Install the inner race -C- in the outer race.

The tabs -4- lock in the larger openings -5- of the synchronizer ring -A-.

3rd Gear Wheel with Needle Bearing, Installing



- The synchronizer ring -1- and the tabs -arrow A- are inside the openings in the synchronizer hub -2-.

The pins -B arrows- in the outer race lock in the recesses -C arrows- in the gear wheel -3-.

- Install the 3rd gear with the needle bearing.



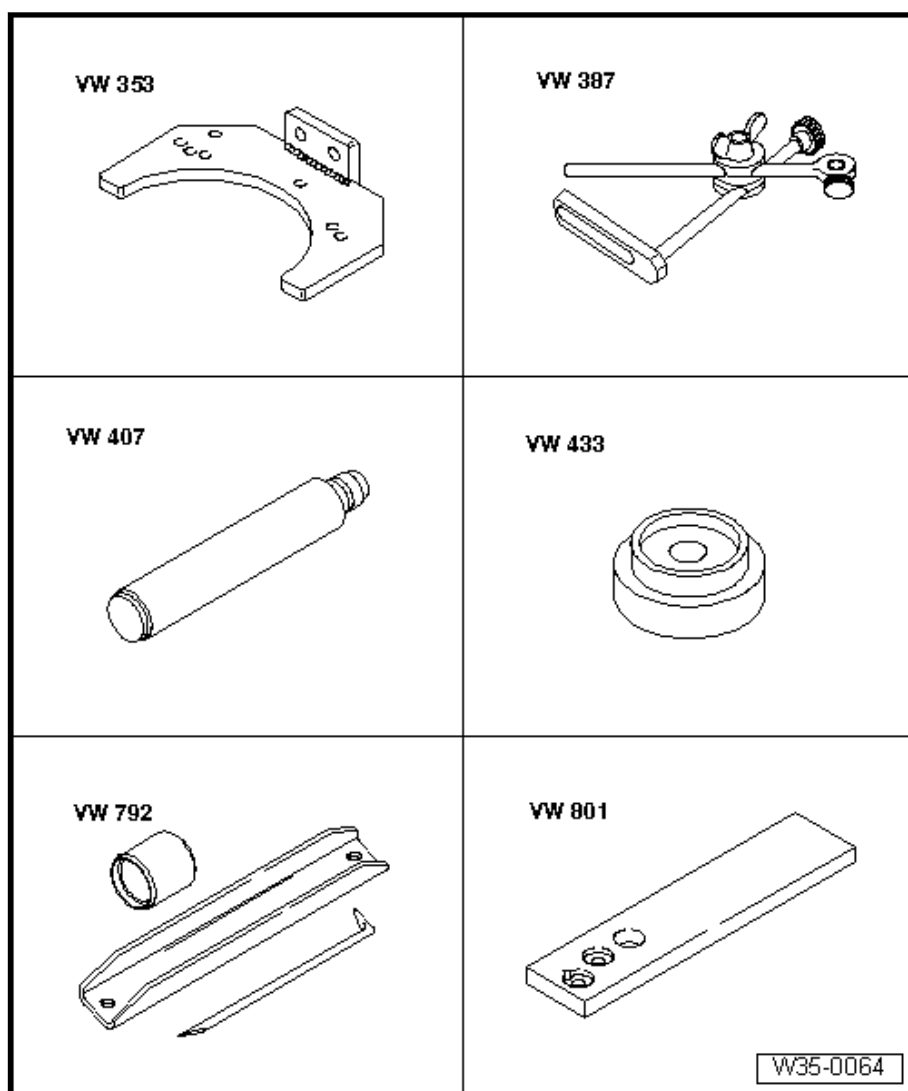
Note

- ♦ To install the inner race/tapered roller bearing, refer to ⇒ [Fig. "Inner Race/Tapered Roller Bearing, Installing on Side facing Transmission Housing", page 403](#).
- ♦ To determine the correct circlip for the inner race/tapered roller bearing, refer to ⇒ [Fig. "Circlip, Determining", page 403](#).

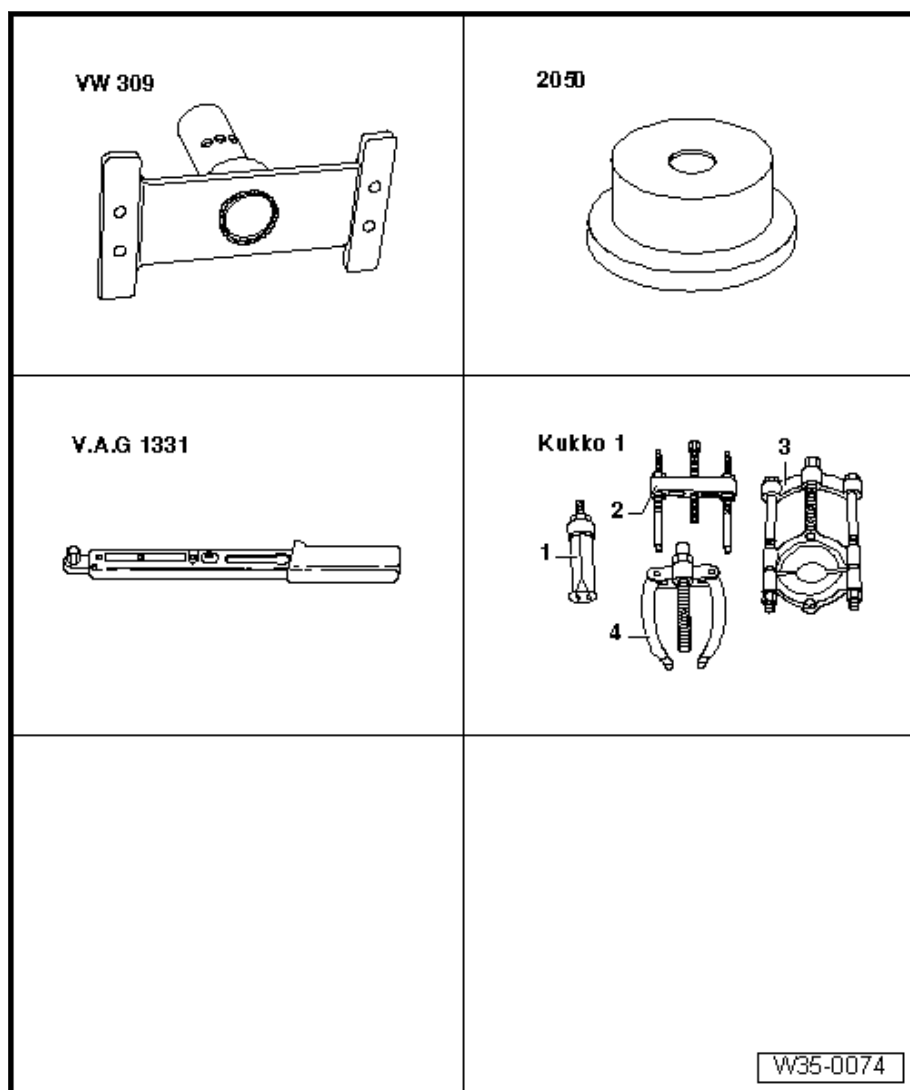
2.3 1st through 4th Gear Output Shaft, Adjusting



Special tools and workshop equipment required



- ◆ Transmission Support -VW 353-
- ◆ Dial Indicator Holder -VW 387-
- ◆ Press Piece - Rod -VW 407-
- ◆ Press Piece - Multiple Use -VW 433-
- ◆ Seal Installer - Stator -VW 792-
- ◆ Crankshaft Holding Fixture -VW 801-



- ◆ Holding Plate -VW 309A-
- ◆ Slide Hammer - Press Plate -2050-
- ◆ Torque Wrench 1331 5-50Nm -V.A.G 1331-
- ◆ -1- Internal Puller -VAS 251 615-
- ◆ -4- Counter Support -VAS 251 623-

(Selecting the correct adjusting shim for the output shaft)

It is necessary to adjust the output shaft if the following components were replaced:

- ◆ Transmission Housing
- ◆ Clutch Housing
- ◆ 1st to 4th gear output shaft or
- ◆ Output shaft tapered roller bearing

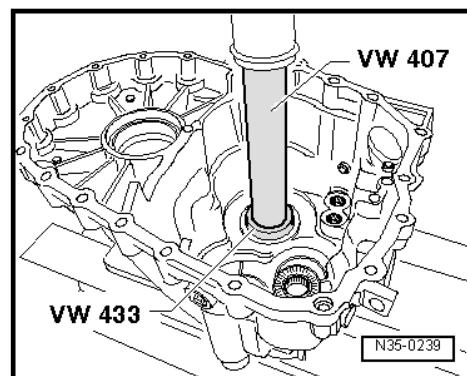
Adjustment Overview. Refer to [⇒ O4 verview", page 494](#) .

Requirements:

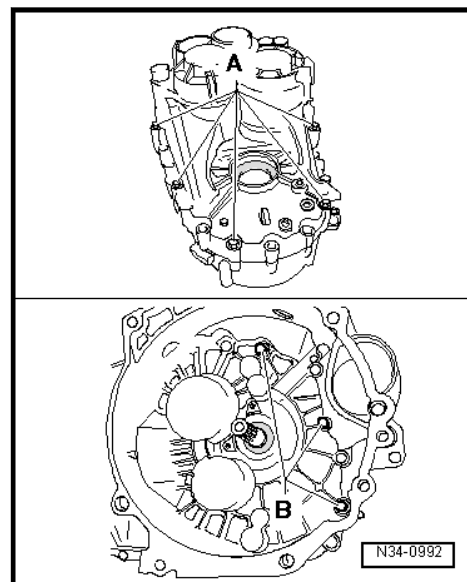
- The sealing surfaces of the clutch and transmission housing must be cleaned of sealant.
- Only install the output shaft that is going to be measured.



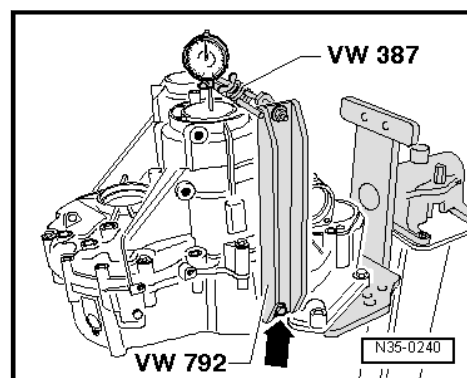
- Install the outer race/tapered roller bearing with a 1.70 mm shim in the transmission housing. At the same time, support the transmission housing directly under the bearing mount using the Slide Hammer - Press Plate -2050-.



- Place the entire 1st to 4th gear output shaft in the clutch housing.
- Install the transmission housing and tighten the bolts -A- and -B- diagonally to the tightening specification.



- Position the measuring tools on the clutch housing and secure them with a bolt -arrow-.



- Set the dial gauge (3 mm measuring range) with 1 mm pre-tension to "0".



- Loosen the clutch housing/transmission housing bolts in a diagonal sequence until the bolts release the transmission housing and output shaft.
- Read the measured value on the dial gauge and make a note of it (example: 0.14 mm).



Note

- ♦ *The measured value will not be displayed when loosening the clutch housing/transmission housing bolts.*
- ♦ *Install a 1.95 mm shim or, if necessary, a 2.20 mm shim in place of the 1.70 mm shim for measuring.*
- ♦ *Allocate the shims. Refer to the ⇒ Electronic Parts Catalog (ETKA).*

2.3.1 Shim, Determining

The required bearing pre-load is reached as follows:

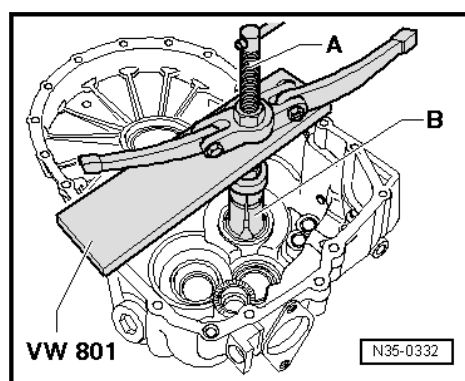
The determined measured value (0.14 mm) is subtracted from the inserted shim (1.70 mm).

A constant preload value (0.20 mm) is added to the reading.

Example:

Inserted shim	1.70 mm
- measured value	0.14 mm
+ preload (constant value)	0.20 mm
Shim thickness	1.76 mm

- Select the correct shim thickness according to the table found here: ⇒ [T2.3.2 able", page 433](#) .
- Remove the transmission housing and remove the tapered roller bearing outer race from the transmission housing.



A - Counter Support, for example, Counter Support - VAS251623-

B - Internal Puller, for example, Internal Puller -VAS251615-

- Remove the inserted shim (1.70 mm) from the transmission housing.

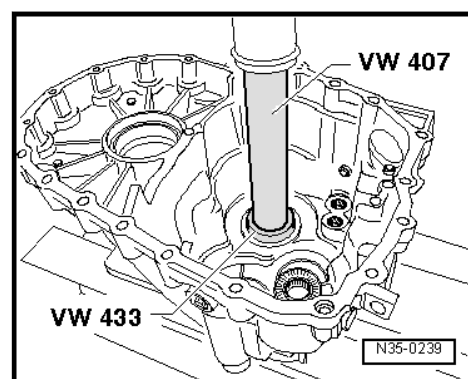


2.3.2 Shim Table

	Thickness (mm)	
1.45	1.75	2.05
1.50	1.80	2.10
1.55	1.85	2.15
1.60	1.90	2.20
1.65	1.95	2.25
1.70	2.00	

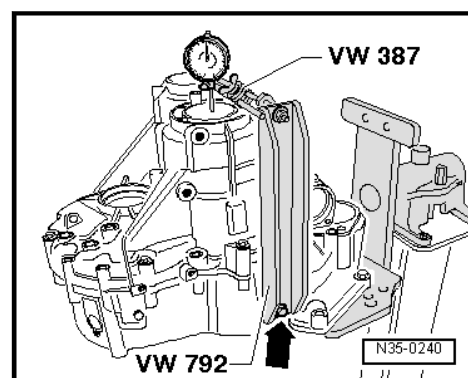
Tolerance variations make it possible to find the exact shim thickness required.

- Determine the shim part number using the ⇒ Electronic Parts Catalog (ETKA).
- Install the outer race/tapered roller bearing with the selected shim (in the example: 1.75 mm). At the same time, support the transmission housing directly under the bearing mount using the Slide Hammer - Press Plate -2050-.



2.3.3 Checking Measurement

- The selected shim is installed.
- Position the measuring tools on the clutch housing and secure them with a bolt -arrow-.



- Set the dial gauge (3 mm measuring range) with 1 mm pre-tension to "0".
- Loosen the clutch housing/transmission housing bolts in a diagonal sequence until the bolts release the transmission housing and output shaft.
- For correctly selected adjustment shim, dial gauge must now display a value of 0.15 mm to 0.25 mm.



3 5th, 6th and Reverse Gear Output Shaft

3.1 Overview - Input Shaft, 5th/6th and Reverse Gears

5th/6th and Reverse Gear Output Shaft, Disassembling and Assembling. Refer to [⇒ a3.2 nd Reverse Gear Output Shaft, Disassembling and Assembling](#), page 436 .



Note

- ◆ *Secure the transmission on the assembly stand. Refer to [⇒ S7 securing to Engine/Transmission Holder](#), page 250 .*
- ◆ *To install, warm the inner races/tapered roller bearing and synchronizer hub to approximately 100 °C [212 F] using Inductive Heater -VAS 6414-. Wear protective gloves.*
- ◆ *Adjust the output shaft if it or the tapered roller bearing are being replaced. Refer to [⇒ a3.3 nd Reverse Gear Output Shaft, Adjusting](#), page 448 .*
- ◆ *Replace both tapered roller bearings together.*



1 - Clutch Housing

2 - Washer

- ❑ Always 0.65 mm thick

3 - Outer Race/Tapered Roller Bearing

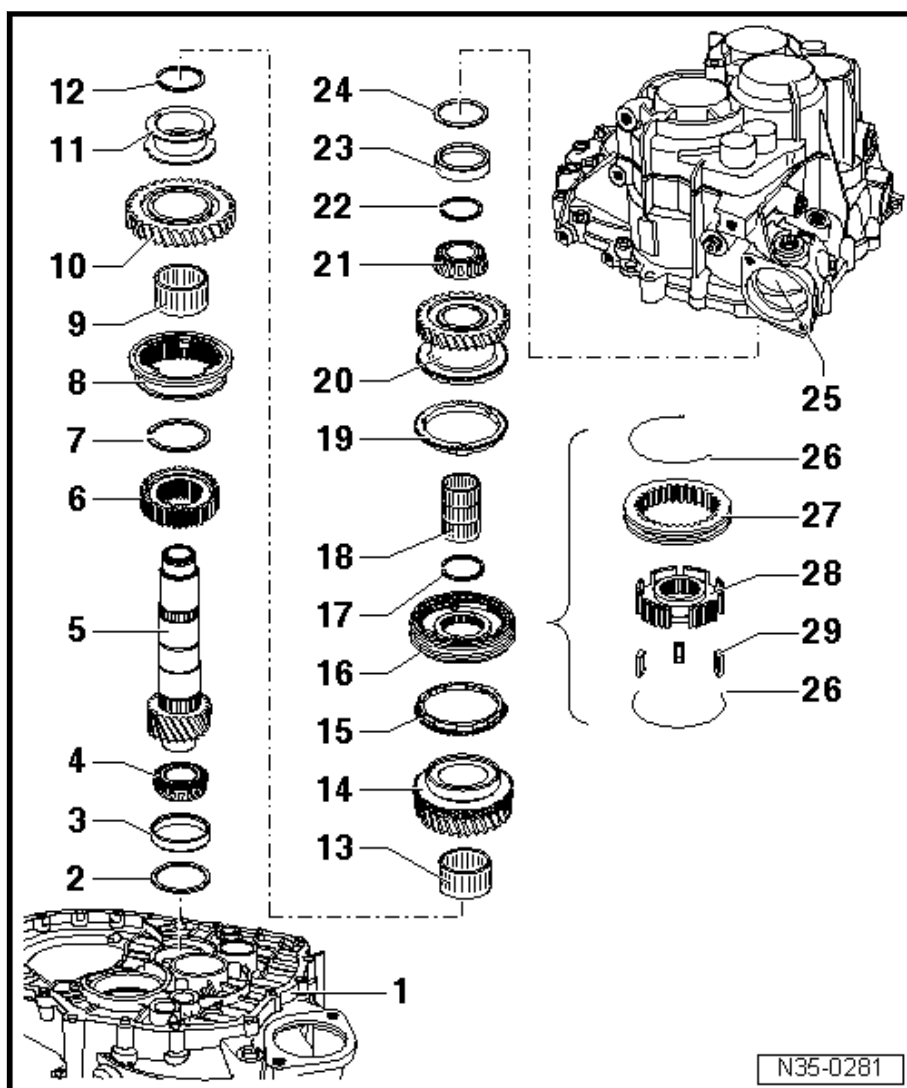
- ❑ Removing. Refer to ➤ [Fig. "Removing the outer race/tapered roller bearing", page 441](#).
- ❑ Installing. Refer to ➤ [Fig. "Outer Race/Tapered Roller Bearing, Installing in Clutch Housing", page 441](#).

4 - Inner Race/Tapered Roller Bearing

- ❑ Removing. Refer to ➤ [Fig. "Inner Race/Tapered Roller Bearing, Removing on Side facing Clutch Housing", page 444](#).
- ❑ Installing. Refer to ➤ [Fig. "Inner Race/Tapered Roller Bearing, Installing on Side facing Clutch Housing", page 448](#).

5 - Output Shaft

- ❑ For 5th/6th and reverse gears
- ❑ Adjusting. Refer to ➤ [a3.3 nd Reverse Gear Output Shaft, Adjusting", page 448](#).



6 - Reverse Gear Synchronizer Hub

- ❑ Removing. Refer to ➤ [Fig. "Reverse Gear Synchronizer Hub, Removing", page 443](#).
- ❑ Installation position. Refer to ➤ [Fig. "Reverse Gear Synchronizer Hub Installation Position", page 444](#).
- ❑ Installing. Refer to ➤ [Fig. "Warming and installing the reverse gear synchronizer hub", page 445](#).

7 - Circlip

8 - Reverse Gear Locking Collar

- ❑ With synchronizer ring

9 - Needle Bearing

- ❑ For reverse gear assembly

10 - Reverse Gear Assembly

11 - Sleeve

- ❑ Remove with the reverse gear wheel. Refer to ➤ [Fig. "Removing the sleeve -A- together with the reverse gear wheel", page 443](#).
- ❑ Installation position: the wider sleeve collar faces the reverse gear wheel
- ❑ Installing. Refer to ➤ [Fig. "Sleeve -A-, Installing", page 445](#).

12 - Circlip

13 - Needle Bearing

- ❑ For 6th gear



14 - 6th Gear Assembly

15 - 6th Gear Synchronizer Ring

- ☐ Made of brass or steel
- ☐ Checking for Wear. Refer to ⇒ [Fig. "5th and 6th Gear Synchronizer Ring, Checking for Wear", page 445](#).

16 - Locking Collar with 5th/6th Gear Synchronizer Hub

- ☐ After removing circlip ⇒ [Item 17 \(page 436\)](#), remove the 6th gear wheel ⇒ [Fig. "5th/6th Gear Synchronizer Hub/Locking Collar with 6th Gear Wheel, Removing", page 443](#)
- ☐ Disassembling. Refer to ⇒ [Fig. "5th and 6th Gear Synchronizer Hub and Locking Collar, Disassembling and Assembling", page 446](#).
- ☐ Locking Collar/Synchronizer Hub, Assembling. Refer to ⇒ [Fig. "5th and 6th Gear Synchronizer Hub and Locking Collar, Disassembling and Assembling", page 446](#) and ⇒ [Fig. "5th and 6th Gear Locking Collar/Synchronizer Hub, Assembling", page 446](#).
- ☐ Installing. Refer to ⇒ [Fig. "5th and 6th Gear Locking Collar/Synchronizer Hub, Warming and Installing", page 447](#).

17 - Circlip

18 - Needle Bearing

- ☐ For 5th gear

19 - 5th Gear Synchronizer Ring

- ☐ Made of brass or steel
- ☐ Checking for Wear. Refer to ⇒ [Fig. "5th and 6th Gear Synchronizer Ring, Checking for Wear", page 445](#).

20 - 5th Gear Assembly

21 - Inner Race/Tapered Roller Bearing

- ☐ Removing. Refer to ⇒ [Fig. "Inner Race/Tapered Roller Bearing, Removing on Side facing Transmission Housing", page 442](#).
- ☐ Installing. Refer to ⇒ [Fig. "Inner Race/Tapered Roller Bearing, Installing on Side facing Transmission Housing", page 447](#).

22 - Circlip

- ☐ Redetermine when replacing the tapered roller bearing ⇒ [Item 21 \(page 436\)](#) and the output shaft ⇒ [Item 5 \(page 435\)](#). Refer to ⇒ [Fig. "Circlip, Determining", page 448](#).

23 - Outer Race/Tapered Roller Bearing

- ☐ Removing. Refer to ⇒ [Fig. "Outer Race/Tapered Roller Bearing, Removing from Transmission Housing", page 442](#).
- ☐ Installing. Refer to ⇒ [Fig. "Outer Race/Tapered Roller Bearing, Installing in Transmission Housing", page 442](#).

24 - Shim

- ☐ Selecting thickness. Refer to ⇒ [a3.3 nd Reverse Gear Output Shaft, Adjusting", page 448](#).

25 - Transmission Housing

26 - Spring

- ☐ Installation position. Refer to ⇒ [Fig. "5th and 6th Gear Locking Collar/Synchronizer Hub, Assembling", page 446](#).

27 - Locking Collar

28 - Synchronizer Hub

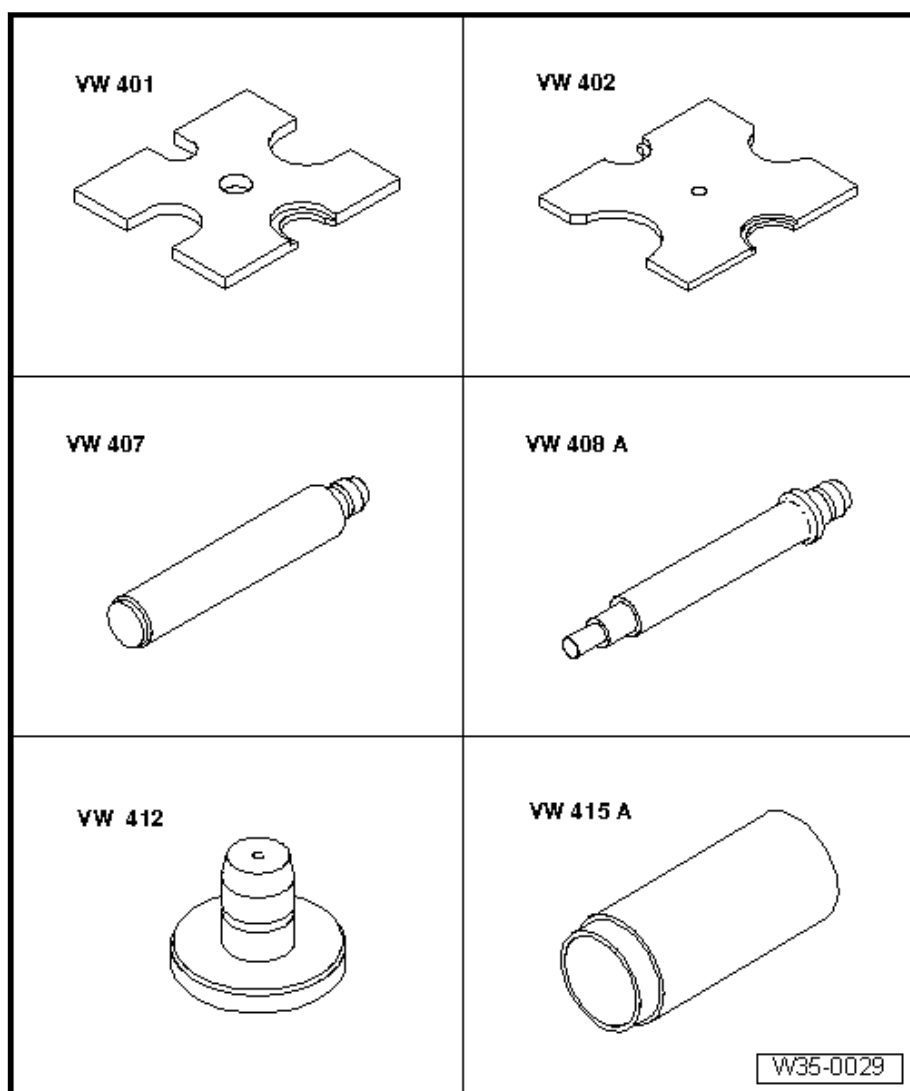
29 - Locking Pieces (Quantity: 3)

- ☐ Installation position. Refer to ⇒ [Fig. "5th and 6th Gear Synchronizer Hub and Locking Collar, Disassembling and Assembling", page 446](#).

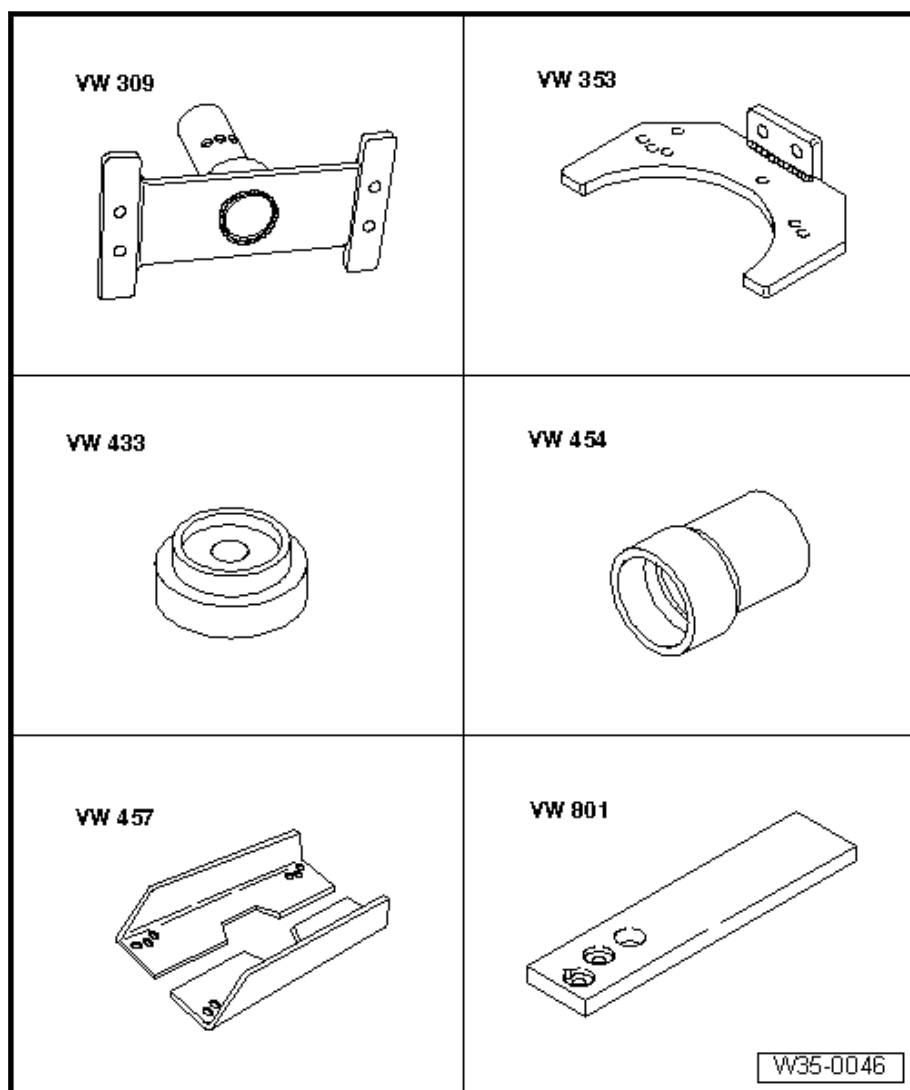
3.2 5th/6th and Reverse Gear Output Shaft, Disassembling and Assembling



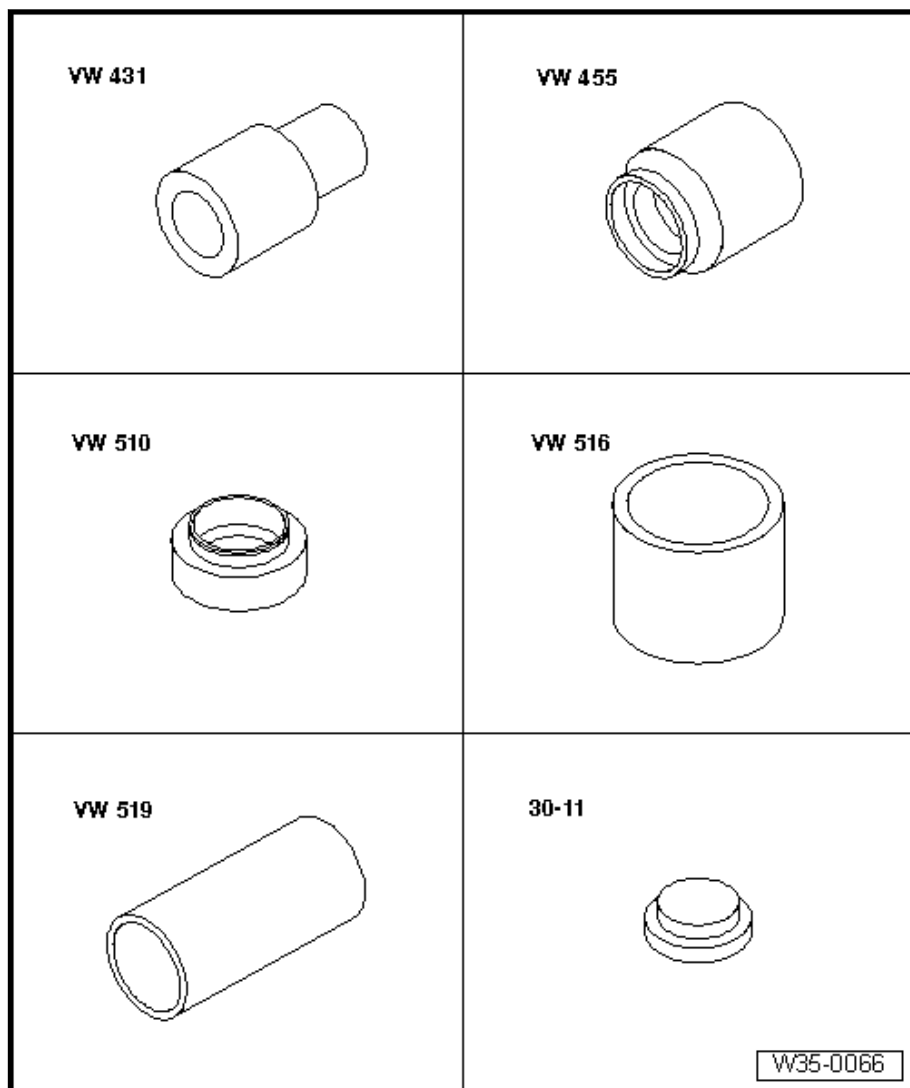
**Special tools and workshop
equipment required**



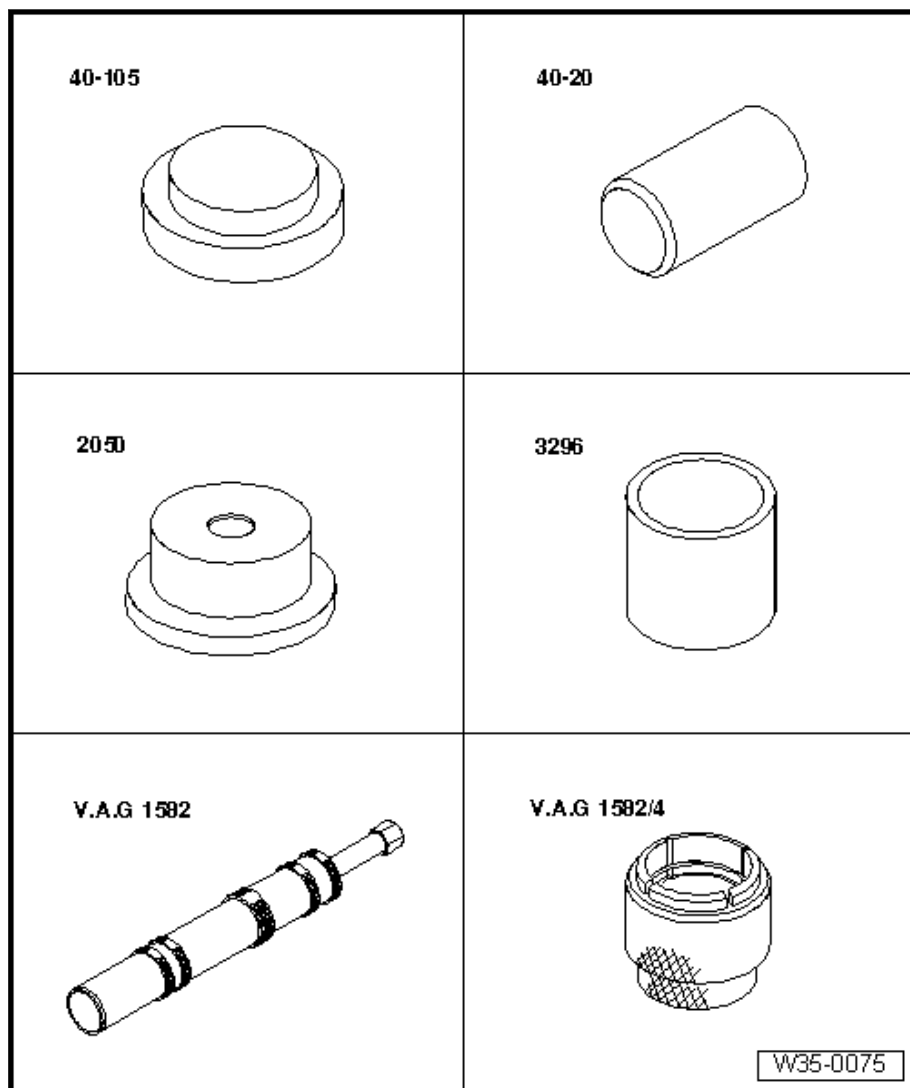
- ◆ Press Plate -VW 401-
- ◆ Press Plate -VW 402-
- ◆ Press Piece - Rod -VW 407-
- ◆ Press Piece - Rod -VW 408 A-
- ◆ Press Piece - Multiple Use -VW 412-
- ◆ Press Piece - 60mm -VW 415 A-



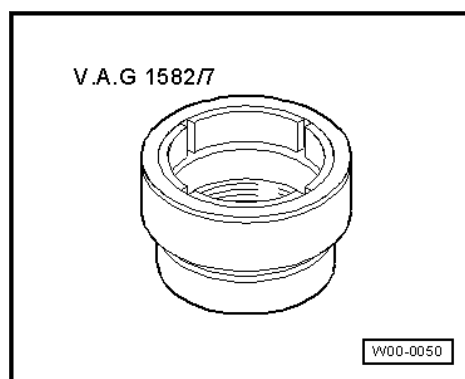
- ◆ Holding Plate -VW 309A-
- ◆ Transmission Support -VW 353-
- ◆ Press Piece - Multiple Use -VW 433-
- ◆ Press Piece - Multiple Use -VW 454-
- ◆ Support Channels -VW 457-
- ◆ Crankshaft Holding Fixture -VW 801-



- ◆ Press Piece - Multiple Use -VW 431-
- ◆ Press Piece - Multiple Use -VW 455-
- ◆ Press Piece - Multiple Use -VW 510-
- ◆ Press Piece - 42mm -VW 516-
- ◆ Press Piece - Multiple Use -VW 519-
- ◆ Press Piece - Multiple Use -30 - 11-

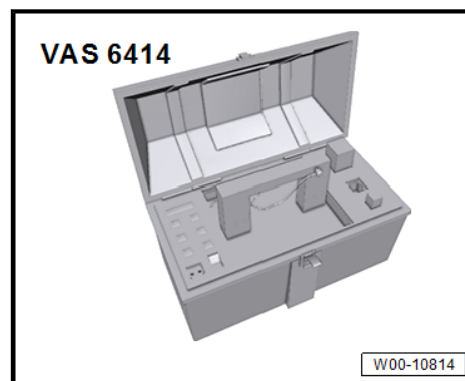


- ◆ Press Piece - Multiple Use -40 - 105-
- ◆ Bearing Installer - Multiple Use -40 - 20-
- ◆ Slide Hammer - Press Plate -2050-
- ◆ Press Piece - Reverse Gear Syncro -3296-
- ◆ Puller - Taper Roller Bearing -V.A.G 1582-
- ◆ Puller - Taper Roller Bearing - Adapter 4 -V.A.G 1582/4-
- ◆ Puller - Taper Roller Bearing - Adapter 7 -V.A.G 1582/7-

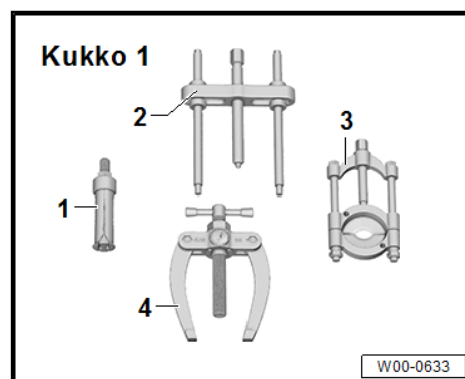




◆ Inductive Heater -VAS 6414-



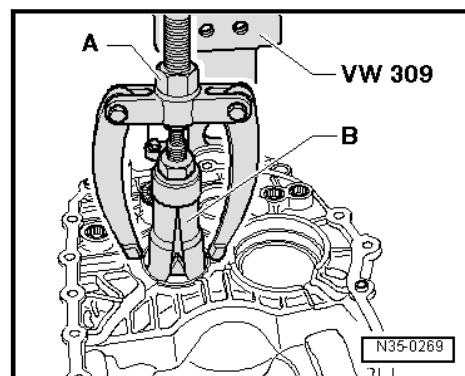
◆ -1- Internal Puller -VAS 251 615-



◆ -3- Splitter -VAS 251411-

◆ -4- Counter Support -VAS 251 623-

Removing the outer race/tapered roller bearing



A - Counter Support, for example, Counter Support - VAS251623-

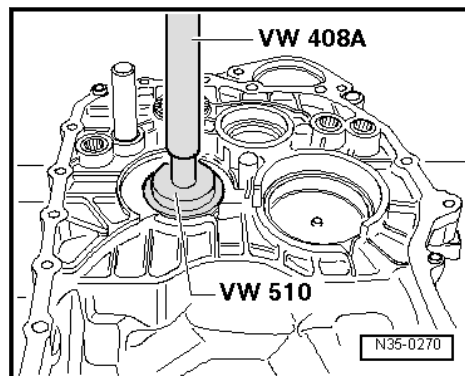
B - Internal Puller, for example, Internal Puller -VAS251615-



Note

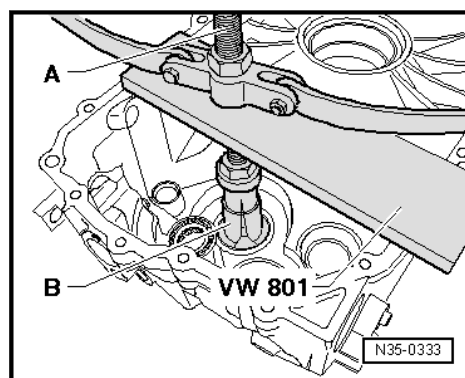
Check the washer for damage after removing it and replace if necessary.

Outer Race/Tapered Roller Bearing, Installing in Clutch Housing



- Place the washer under the outer race.
- Support the clutch housing with the Bearing Installer - Multiple Use -40-20- directly under the bearing mount.

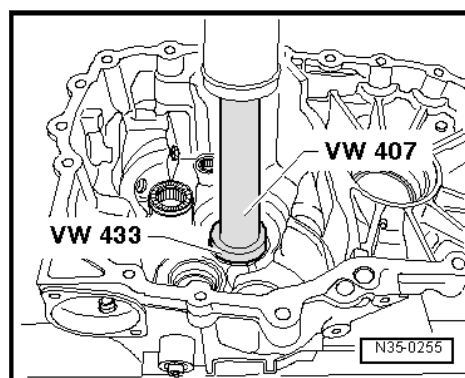
Outer Race/Tapered Roller Bearing, Removing from Transmission Housing



A - Counter Support, for example, Counter Support - VAS251623-

B - Internal Puller, for example, Internal Puller -VAS251615-

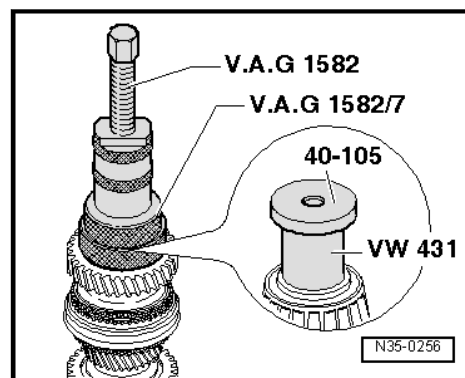
Outer Race/Tapered Roller Bearing, Installing in Transmission Housing



- Support the transmission housing under the bearing mount using the Slide Hammer - Press Plate -2050-.

Output Shaft, Disassembling

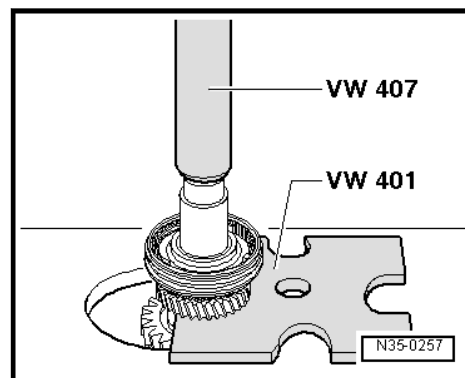
Inner Race/Tapered Roller Bearing, Removing on Side facing Transmission Housing



Before installing the Tapered Roller Bearing Puller:

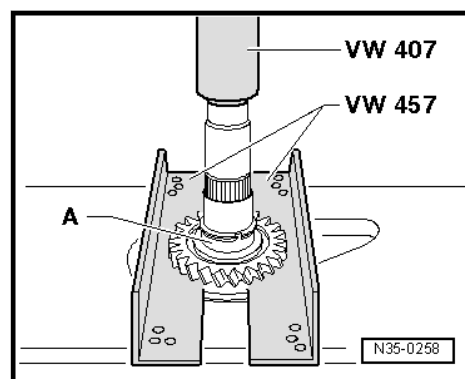
- Remove the circlip for the inner race/tapered roller bearing on the side facing the transmission housing.
- Place the Press Piece - Multiple Use -VW 431- and Press Piece - Multiple Use -40-105- on the output shaft.

5th/6th Gear Synchronizer Hub/Locking Collar with 6th Gear Wheel, Removing



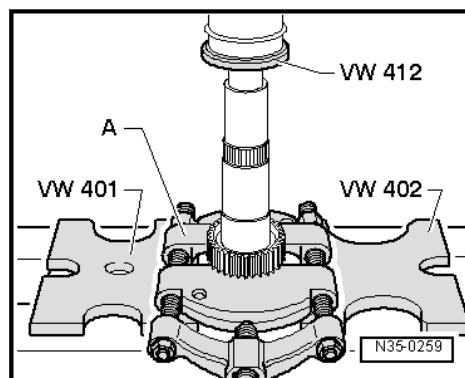
- Remove the circlip beforehand.

Removing the sleeve -A- together with the reverse gear wheel



- Remove the circlip beforehand.

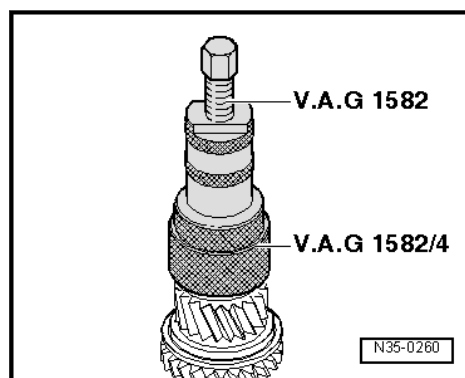
Reverse Gear Synchronizer Hub, Removing



- Remove the circlip beforehand.

A - 22 to 115 mm Separating Tool, for example, Splitter -VAS 251411-

Inner Race/Tapered Roller Bearing, Removing on Side facing Clutch Housing



- Mount the Press Piece - Multiple Use -30 - 11- on the output shaft before mounting the puller.

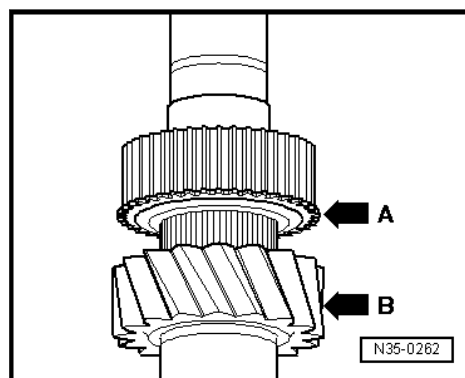
Assemble the output shaft.



Note

Heat the tapered bearing inner races and synchronizer hub to approximately 100 °C with the Inductive Heat Unit -VAS 6414- before installing. Press on to the stop so that there is no axial clearance when assembling.

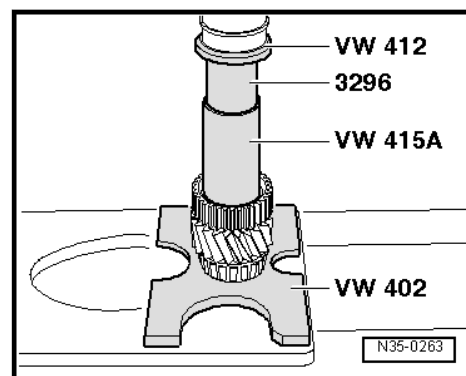
Reverse Gear Synchronizer Hub Installation Position



- The stop -arrow A- for the reverse gear locking collar faces the output shaft splines -arrow B-.

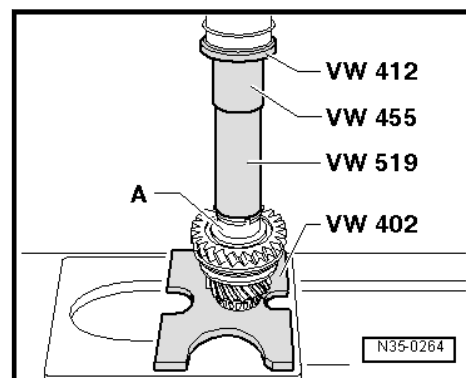


Warming and installing the reverse gear synchronizer hub



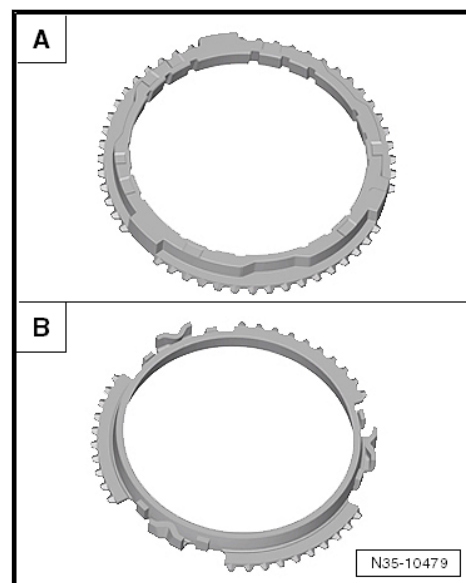
- Install the circlip.
- Mount the reverse gear locking collar on the reverse gear synchronizer hub.
- Install the reverse gear wheel with the needle bearing.

Sleeve -A-, Installing



- Installation position: the wider collar faces the reverse gear wheel.
- Install the circlip.

5th and 6th Gear Synchronizer Ring, Checking for Wear

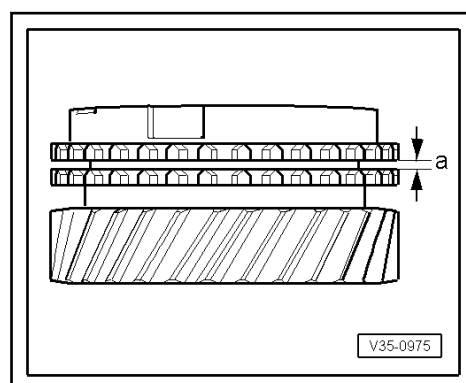




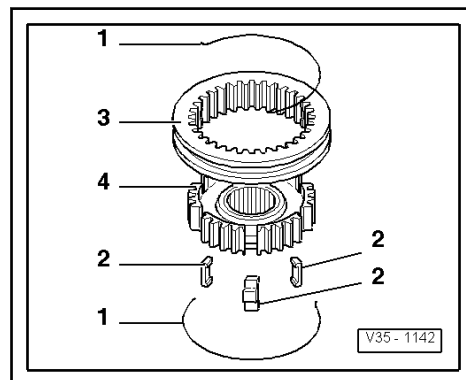
-A- = brass synchronizer ring		
Gap dimension -a-	Installed dimension	Wear limit
5th and 6th gear	1.0 to 1.7 mm	0.5 mm

-B- = steel synchronizer ring		
Gap dimension -a-	Installed dimension	Wear limit
5th and 6th gear	1.2 to 2.1 mm	0.8 mm

- Push the synchronizer ring onto the gear assembly taper and then measure the gap dimension -a- with a feeler gauge.

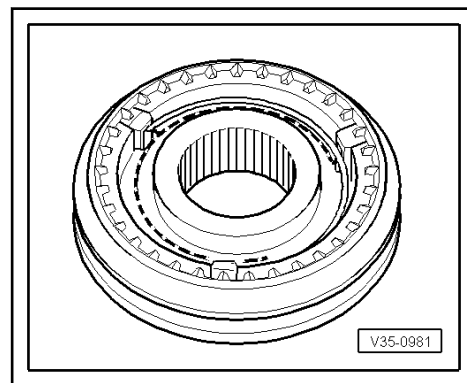


5th and 6th Gear Synchronizer Hub and Locking Collar, Disassembling and Assembling



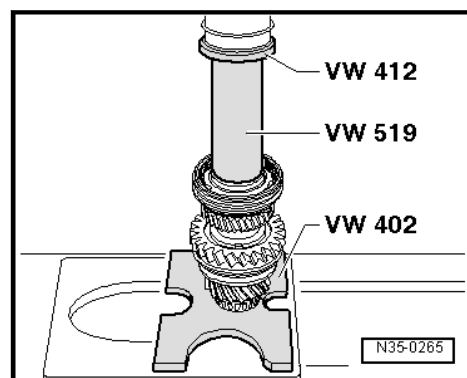
- To disassemble, remove the springs -1-.
- 1 - Spring
- 2 - Locking Piece
- 3 - Locking Collar
- 4 - Synchronizer Hub
- Slide the locking collar over the synchronizer hub.
- Installed position: the narrow locking piece recesses in the synchronizer hub align with the recesses in the locking collar.

5th and 6th Gear Locking Collar/Synchronizer Hub, Assembling



- The locking collar is pushed over the synchronizer hub.
- Install the locking pieces and springs offset by 120°.
- The angled end of the spring must engage into the hollow locking piece.
- Install the 6th gear assembly with the needle bearing.
- Install the 6th gear synchronizer ring.

5th and 6th Gear Locking Collar/Synchronizer Hub, Warning and Installing

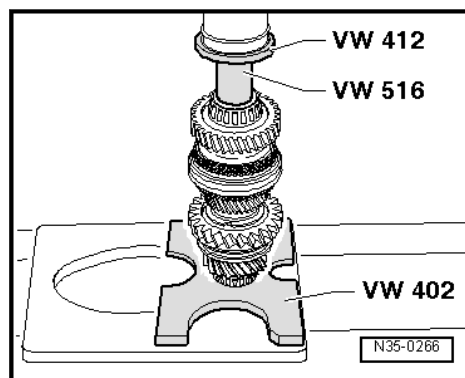


On some locking collars, there is a bevel on the outer diameter.

Installation position: the bevel on the outer diameter of the locking collar faces toward the 5th gear wheel.

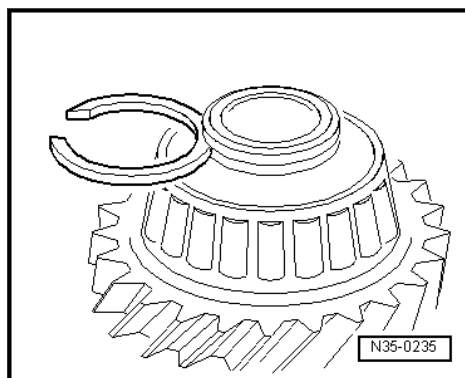
- Turn the 6th gear synchronizer ring so that the grooves line up with the locking pieces.
- Install the circlip.
- Install the 5th gear synchronizer ring.
- Install the 5th gear assembly with the needle bearing.

Inner Race/Tapered Roller Bearing, Installing on Side facing Transmission Housing



- Determine the correct circlip (refer to ⇒ [Fig. “Circlip, Determining”](#), [page 448](#)) and install it.

Circlip, Determining

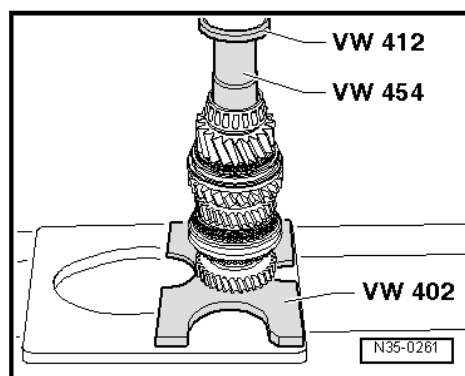


- Select and install the thickest circlip that will fit.
- Select the appropriate circlip according to the table. Part number. Refer to the ⇒ Electronic Parts Catalog (ETKA).

Available Circlips

Thickness (mm)		
1.79	1.89	1.98
1.83	1.92	
1.86	1.95	

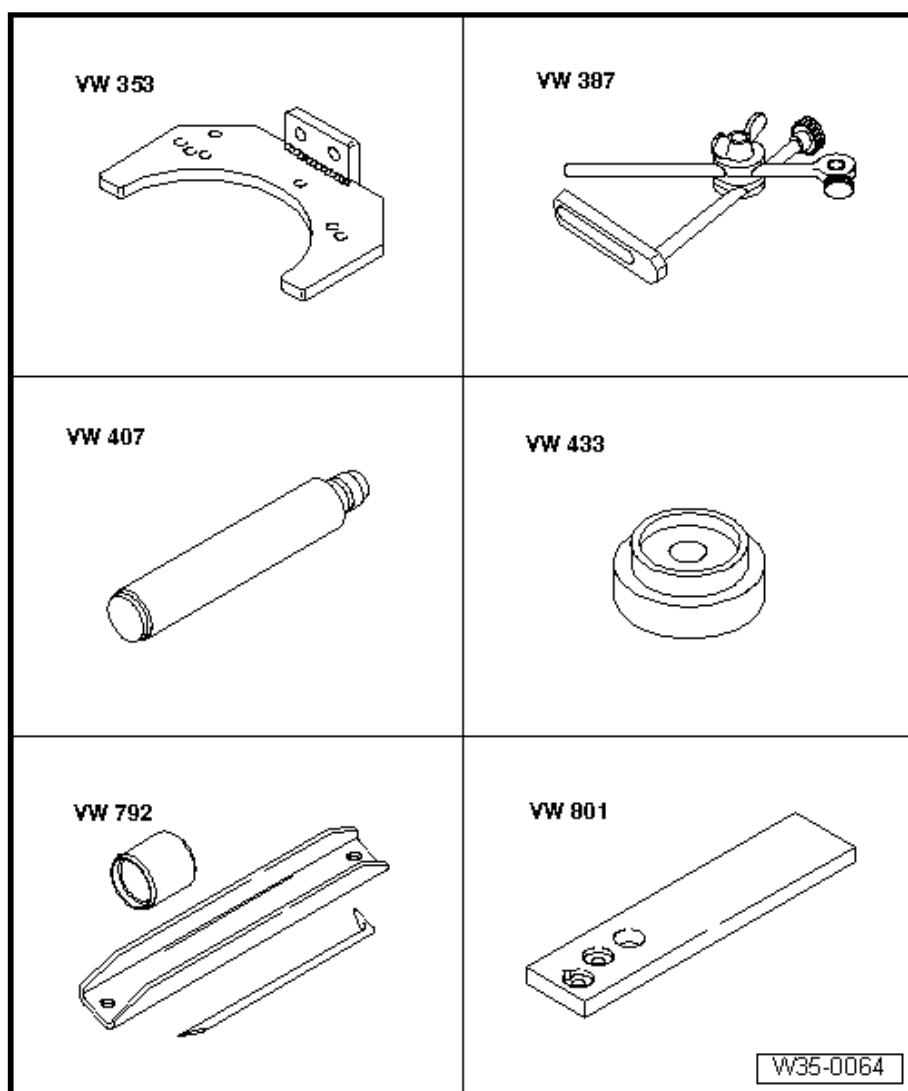
Inner Race/Tapered Roller Bearing, Installing on Side facing Clutch Housing



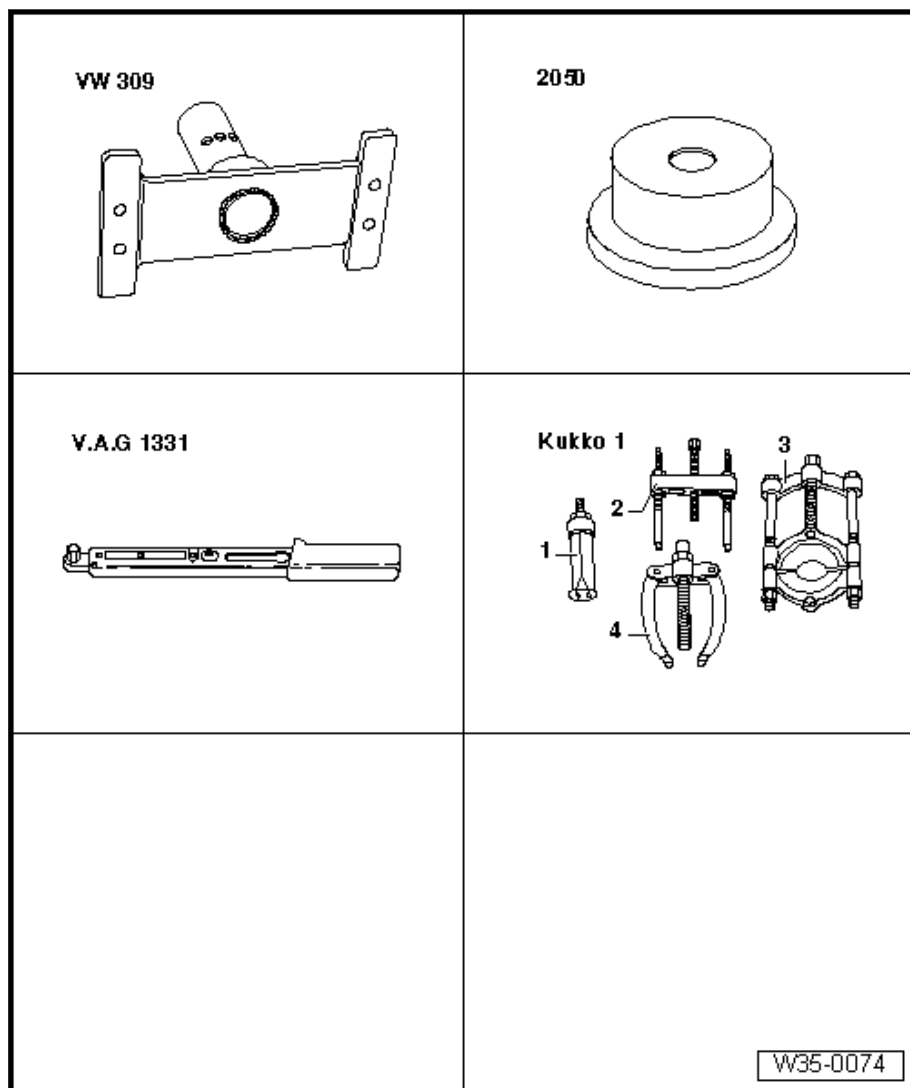
3.3 5th/6th and Reverse Gear Output Shaft, Adjusting



**Special tools and workshop
equipment required**



- ◆ Transmission Support -VW 353-
- ◆ Dial Indicator Holder -VW 387-
- ◆ Press Piece - Rod -VW 407-
- ◆ Press Piece - Multiple Use -VW 433-
- ◆ Seal Installer - Stator -VW 792-
- ◆ Crankshaft Holding Fixture -VW 801-



- ◆ Holding Plate -VW 309A-
- ◆ Slide Hammer - Press Plate -2050-
- ◆ Torque Wrench 1331 5-50Nm -V.A.G 1331-
- ◆ -1- Internal Puller -VAS 251 615-
- ◆ -4- Counter Support -VAS 251 623-

It is necessary to adjust the output shaft if the following components were replaced:

- ◆ Transmission Housing
- ◆ Clutch Housing
- ◆ 5th/6th and Reverse Gear Output Shaft
- ◆ Output shaft tapered roller bearing

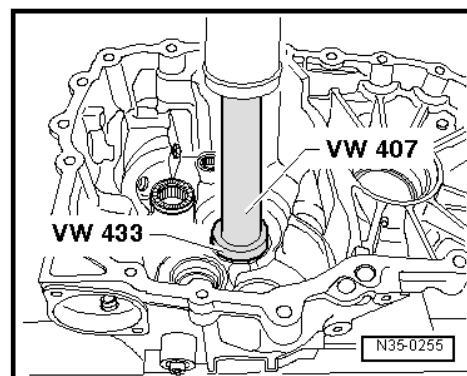
Adjustment Overview. Refer to [⇒ O4 overview", page 494](#) .

Requirements:

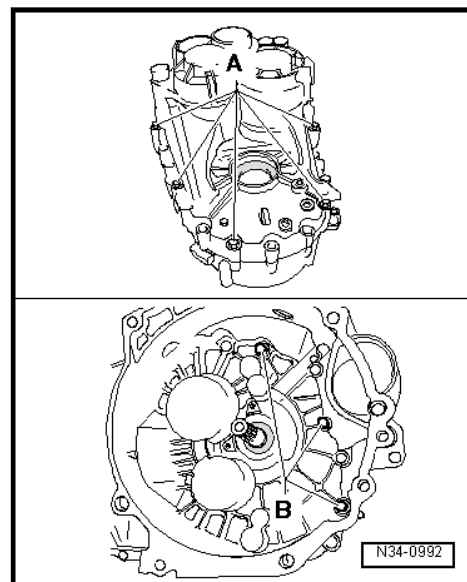
- The sealing surfaces of the clutch and transmission housing must be cleaned of sealant.
- Only install the output shaft that is going to be measured.



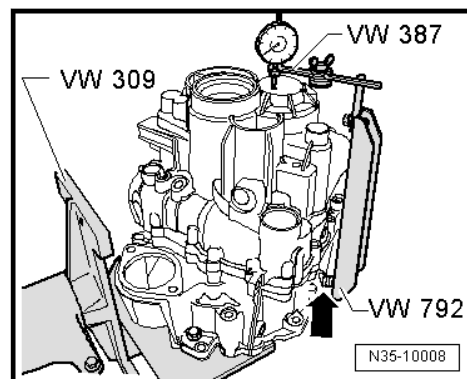
- Install the outer race/tapered roller bearing with a 1.70 mm shim in the transmission housing. At the same time, support the transmission housing directly under the bearing mount using the Slide Hammer - Press Plate -2050-.



- Place the entire 5th/6th and reverse gear output shaft in the clutch housing.
- Install the transmission housing and tighten the bolts -A- and -B- diagonally to the tightening specification.



- Install the measuring tools.



- Place several washers (total thickness: 8 mm) on the clutch housing at the bolt -arrow- being used to secure the Seal Installer - Stator -VW 792-.



- Set the dial gauge (3 mm measuring range) with 1 mm pre-tension to “0”.
- Loosen the clutch housing/transmission housing bolts in a diagonal sequence until the bolts release the transmission housing and output shaft.
- Read the measured value on the dial gauge and make a note of it (example: 0.25 mm).



Note

- ◆ *The measured value will not be displayed when loosening the clutch housing/transmission housing bolts.*
- ◆ *Install a 1.95 mm shim or, if necessary, a 2.20 mm shim in place of the 1.70 mm shim for measuring.*
- ◆ *Allocate the shims. Refer to the ➔ Electronic Parts Catalog (ETKA).*

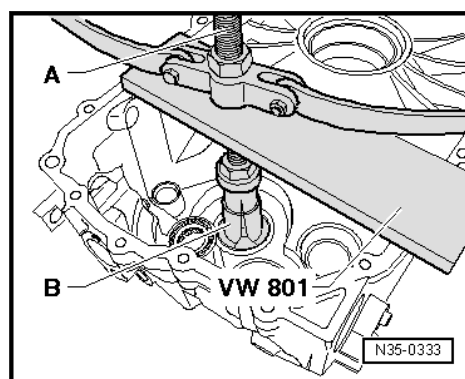
3.3.1 Shim, Determining

The specified bearing preload is obtained by adding a constant preload figure of (0.20 mm) to the reading obtained (0.25 mm) and the thickness of the shim installed (1.70 mm).

Example:

Inserted shim	1.70 mm
- measured value	0.25 mm
+ preload (constant value)	0.20 mm
Shim thickness	1.65 mm

- Select the correct shim thickness according to the table found here: ➔ [T3.3.2 able”, page 453](#) .
- Remove the transmission housing and remove the tapered roller bearing outer race from the transmission housing.



A - Counter Support, for example, Counter Support - VAS251623-

B - Internal Puller, for example, Internal Puller -VAS251615-

- Remove the inserted shim (1.70 mm) from the transmission housing.



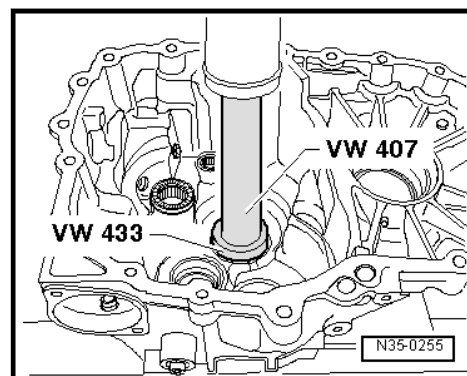
3.3.2 Shim Table

Thickness (mm)		
1.50	1.80	2.10
1.55	1.85	2.15
1.60	1.90	2.20
1.65	1.95	2.25
1.70	2.00	
1.75	2.05	

- Part numbers. Refer to the ➔ Electronic Parts Catalog (ET-KA).

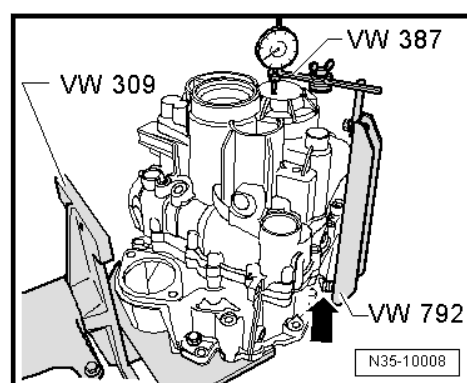
Tolerance variations make it possible to find the exact shim thickness required.

- Install the outer race/tapered roller bearing with the selected shim (in the example: 1.65 mm). At the same time, support the transmission housing directly under the bearing mount using the Slide Hammer - Press Plate -2050-.



3.3.3 Checking Measurement

- The selected shim is installed.
- Install the measuring tools.



- Place several washers (total thickness: 8 mm) on the clutch housing at the bolt -arrow- being used to secure the Seal Installer - Stator -VW 792-.
- Set the dial gauge (3 mm measuring range) with 1 mm pre-tension to "0".
- Loosen the clutch housing/transmission housing bolts in a diagonal sequence until the bolts release the transmission housing and output shaft.



- For correctly selected adjustment shim, dial gauge must now display a value of 0.15 mm to 0.25 mm.

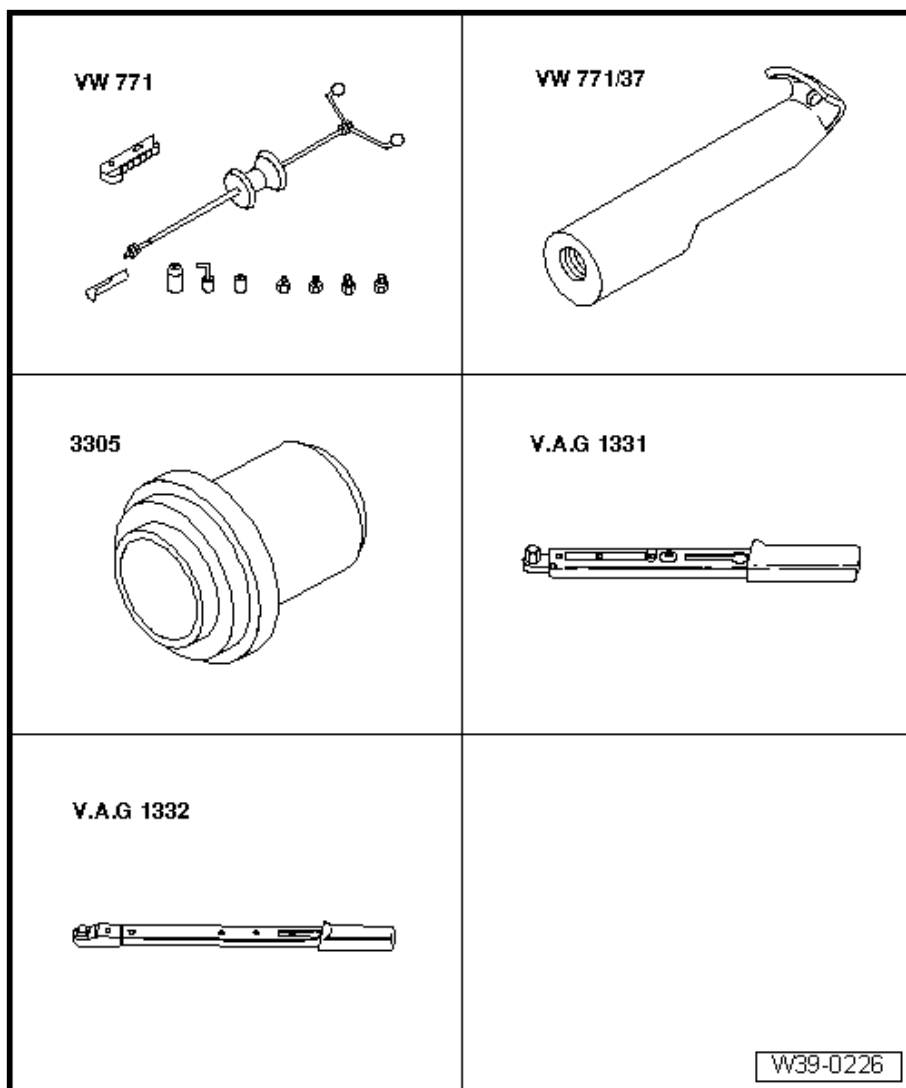


39 – Final Drive, Differential

1 Flange Shaft Seals, Manual Transmission Installed, Replacing for FWD Vehicles

1.1 Left Flange Shaft Seal, Replacing

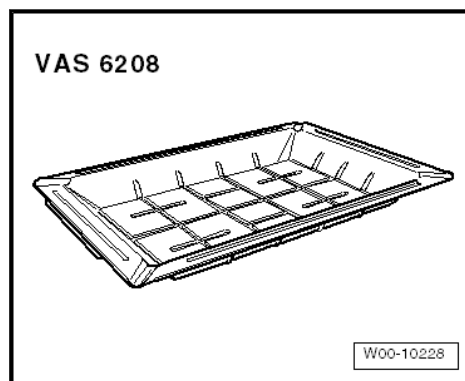
Special tools and workshop equipment required



- ◆ Slide Hammer Set -VW 771-
- ◆ Slide Hammer Set - Hook -VW 771/37-
- ◆ Seal Installer - Flange Shaft -3305-
- ◆ Torque Wrench 1331 5-50Nm -V.A.G 1331-
- ◆ Torque Wrench 1332 40-200Nm -V.A.G 1332-
- ◆ Sealing Grease -G 052 128 A1-

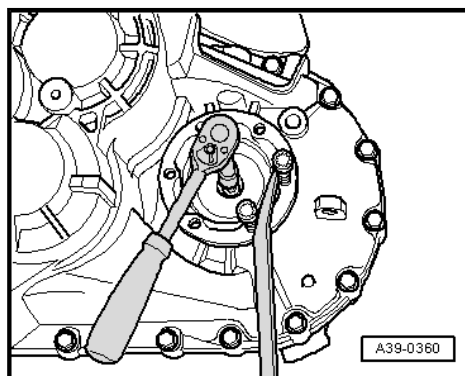


◆ Shop Crane - Drip Tray -VAS 6208-

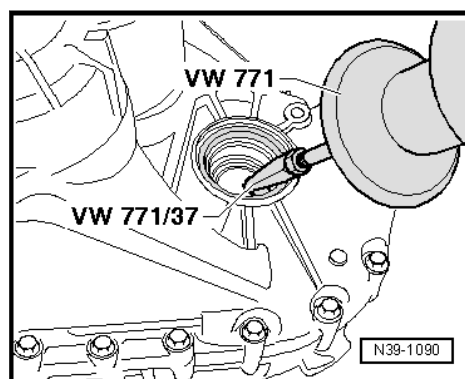


1.1.1 Removing

- Remove the left wheel.
- Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 50; Noise Insulation.
- Remove the lower section of the left front wheel housing liner or the left front wheel housing liner. Refer to ⇒ Body Exterior; Rep. Gr. 66; Wheel Housing Liner.
- Remove the left drive axle. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axles, Removing and Installing.
- Place the Drip Tray under the transmission.
- Remove the flange shaft bolt. To do this, install two bolts into the flange and counterhold the flange shaft using a pry bar.

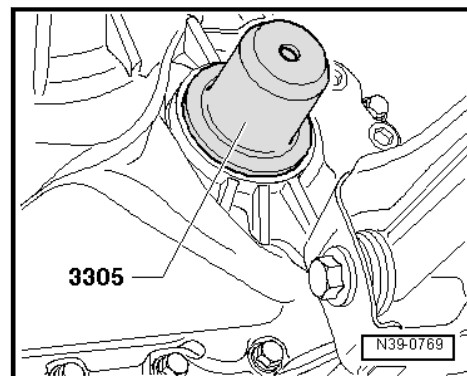


- Remove the flange shaft with the pressure spring.
- Remove the flange shaft seal.

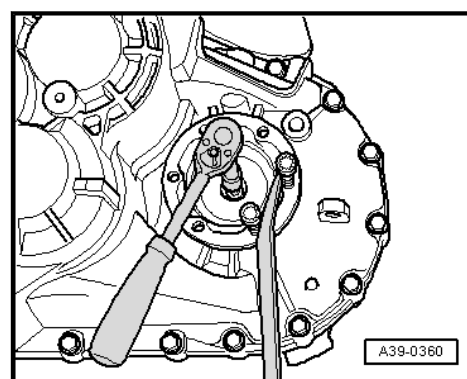


1.1.2 Installing

- Install the seal all the way in without tilting it.



- Fill the space between the sealing/dust lip halfway with Sealing Grease -G 052 128 A1-.
- Insert the flange shaft.



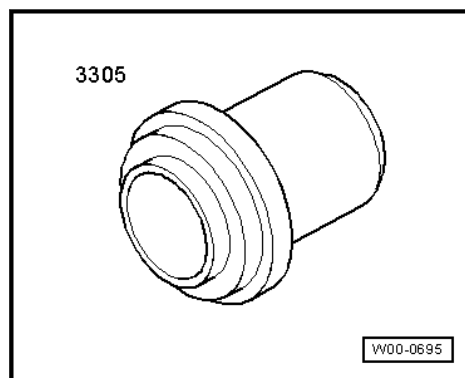
- Fasten the flange shaft with a countersunk bolt and tighten it to the tightening specification ➔ [Item 10 \(page 498\)](#) .
- Install the left drive axle. Refer to ➔ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axle, Removing and Installing.
- Install the lower section of the left front wheel housing liner or the left front wheel housing liner. Refer to ➔ Body Exterior; Rep. Gr. 66; Wheel Housing Liner.
- Install the wheel. Refer to ➔ Suspension, Wheels, Steering; Rep. Gr. 44; Wheel Tightening Specifications.
- Check the transmission fluid level. Refer to ➔ [F8 fluid, Checking](#), [page 252](#) .
- Install the noise insulation. Refer to ➔ Body Exterior; Rep. Gr. 50; Noise Insulation.

1.2 Right Flange Shaft Seal, Replacing

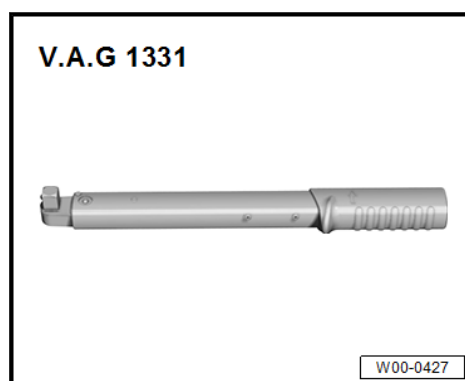
Special tools and workshop equipment required



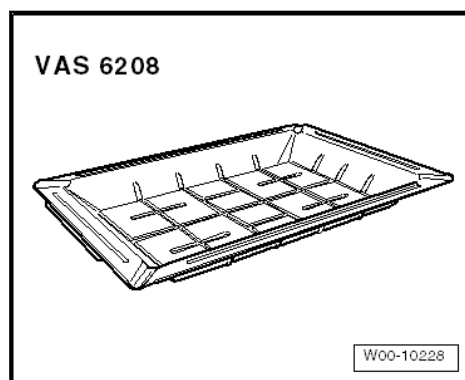
- ◆ Seal Installer - Flange Shaft -3305-



- ◆ Torque Wrench 1331 5-50Nm -V.A.G 1331-



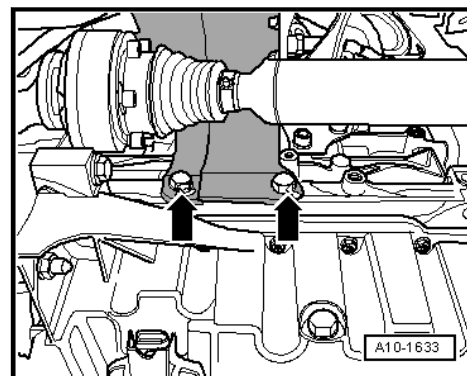
- ◆ Shop Crane - Drip Tray -VAS 6208-



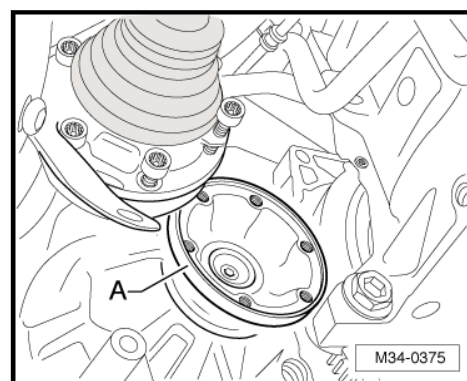
- ◆ Sealing Grease -G 052 128 A1-

1.2.1 Removing

- Remove the noise insulation. Refer to ⇒ Body Exterior; Rep. Gr. 50; Noise Insulation.
- If equipped, remove the drive axle heat shield from the engine -arrows-.



- Remove the right drive axle from the transmission flange shaft -A-.

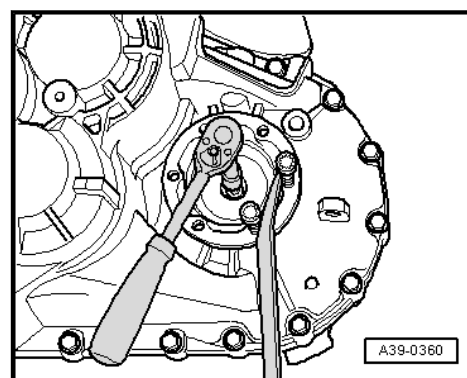


- Secure drive axles using wire, do not damage protective coating when doing this.



Note

- ◆ *On some engines, the drive axle cannot be tied up so that the flange shaft can be removed.*
- ◆ *Remove the drive axle. Refer to ➔ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axles, Removing and Installing.*
- Place a Drip Tray such as the Shop Crane - Drip Tray -VAS 6208- under the transmission.
- Remove the flange shaft bolt. To do this, install two bolts into the flange and counterhold the flange shaft using a pry bar.

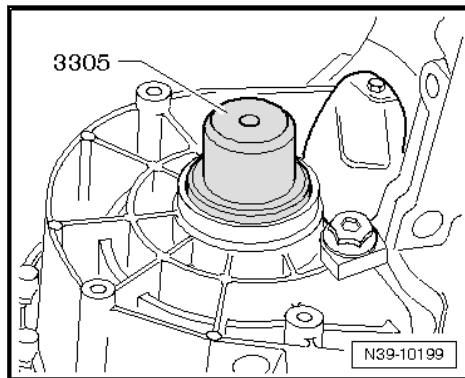


- Remove the flange shaft with the pressure spring (the illustration shows the left flange shaft).
- Pry out the seal with an extractor lever.

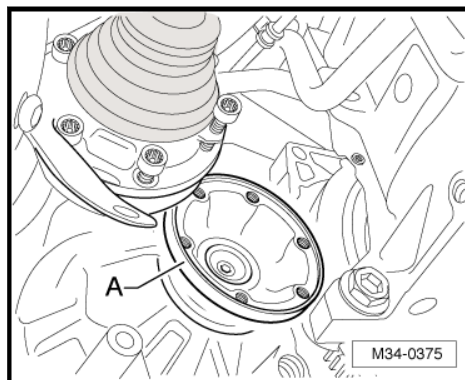


1.2.2 Installing

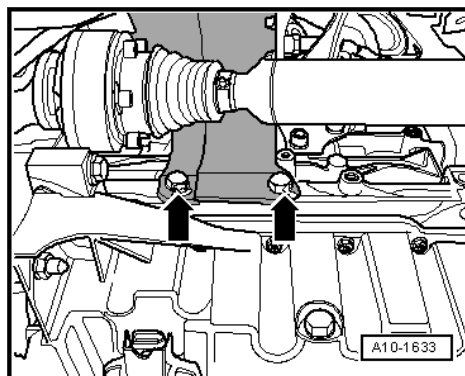
- Install the seal all the way in without tilting it.



- Fill the space between the sealing/dust lip halfway with Sealing Grease -G 052 128 A1-.
- Fasten the flange shaft -A- with a countersunk bolt and tighten it to the tightening specification ➔ [Item 10 \(page 498\)](#) .



- Attach the right drive axle to the flange shaft -A-. Refer to ➔ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axles, Removing and Installing.
- Install the drive axle heat shield to the engine, if equipped and tighten the bolts -arrows- to the tightening specification. Refer to ➔ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axles, Servicing - Drive Axle Overview.



- Check the transmission fluid level. Refer to ➔ [F8 fluid, Checking", page 252](#) .
- Install the noise insulation. Refer to ➔ Body Exterior; Rep. Gr. 50; Noise Insulation.



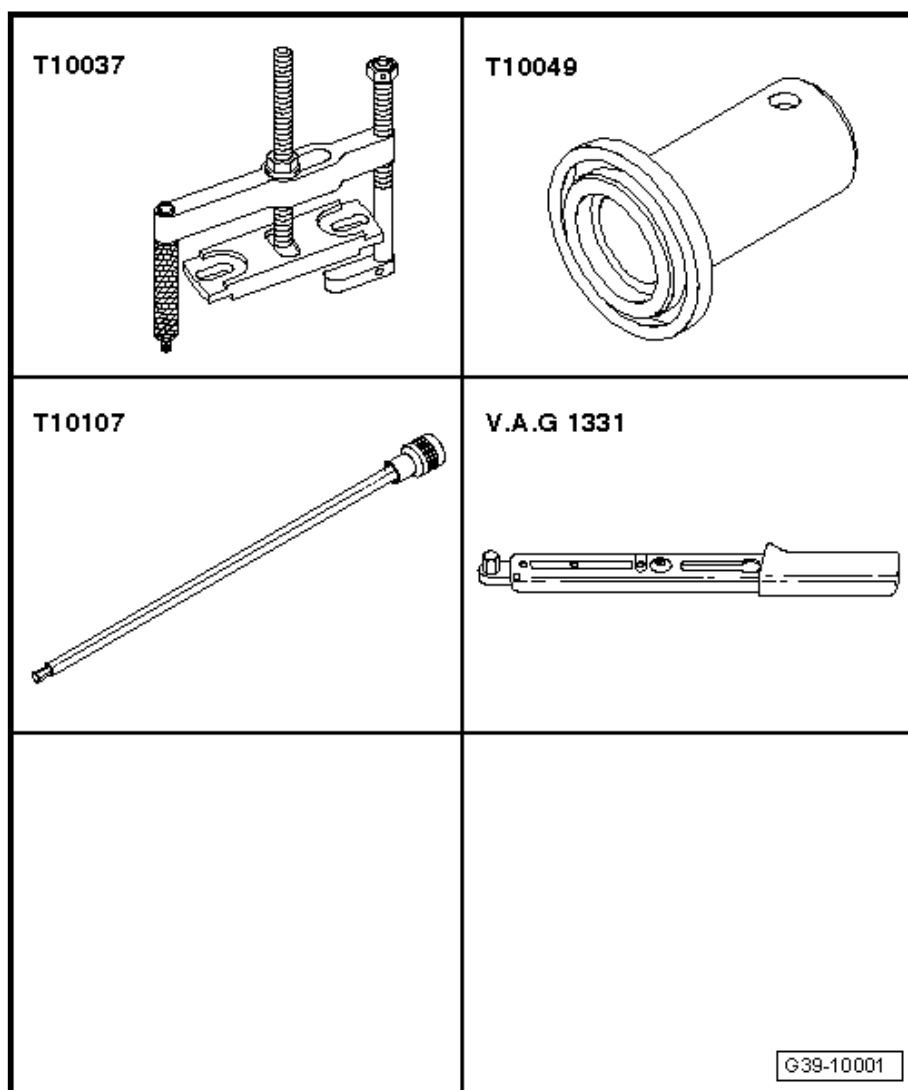
2 Flange Shaft Seals and Bevel Box, Replacing for AWD Vehicles (Manual Transmission already Installed)

2.1 Left Flange Shaft Seal, Replacing

Replacing the seal on the left flange shaft is identical on AWD and FWD vehicles. Refer to ➔ [F1.1 Flange Shaft Seal, Replacing](#), page 455.

2.2 Right Flange Shaft Seal, Replacing

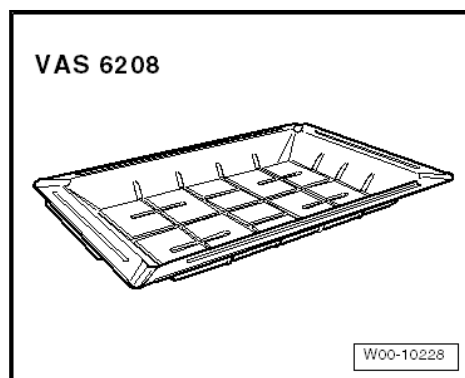
Special tools and workshop equipment required



- ◆ Puller - Flanged Shaft -T10037-
- ◆ Seal Installer - Flange Shaft -T10049-
- ◆ Socket And Extended Bit -T10107-
- ◆ or Socket And Extended Bit -T10107 A-
- ◆ Torque Wrench 1331 5-50Nm -V.A.G 1331-
- ◆ Sealing Grease -G 052 128 A1-

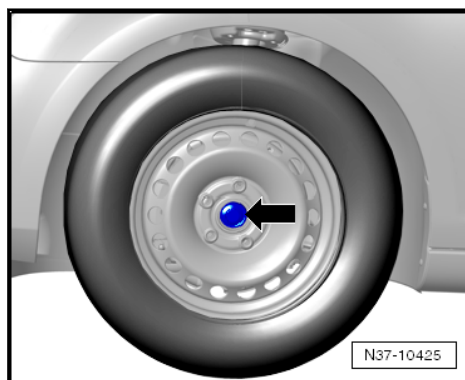


◆ Shop Crane - Drip Tray -VAS 6208-

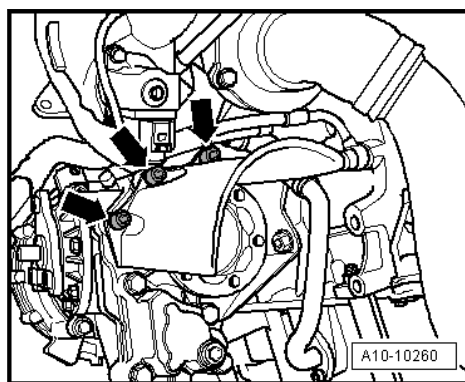


2.2.1 Removing

The right drive axle must be removed later in the procedure.



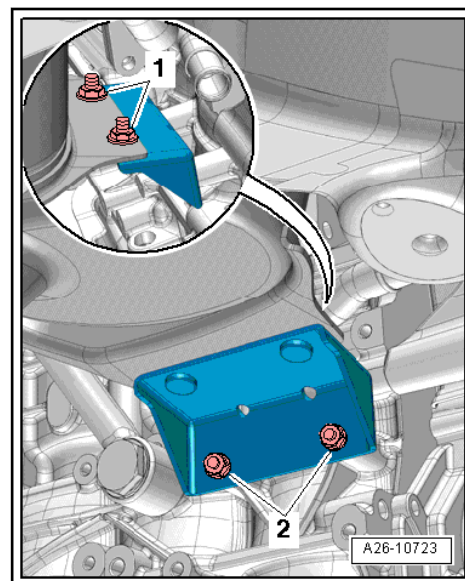
- With the vehicle still standing on its wheels, loosen the right front collar bolt -arrow- a maximum 90°, otherwise the wheel bearing will get damaged. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axles, Removing and Installing.
- Remove the right front wheel.
- Remove the noise insulation under the engine/transmission, if equipped. Refer to ⇒ Body Exterior; Rep. Gr. 50; Noise Insulation.
- Remove the drive axle heat shield from the bevel box -arrows-.



- Remove the right drive axle. Refer to ⇒ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axles, Removing and Installing.



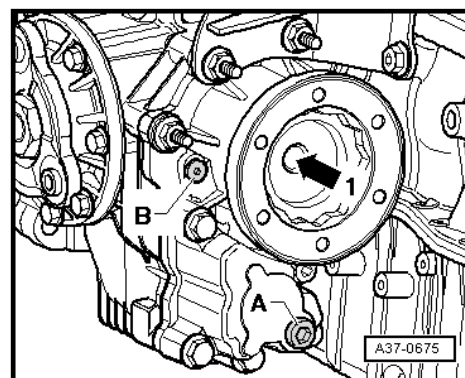
Vehicles with Particulate Filter



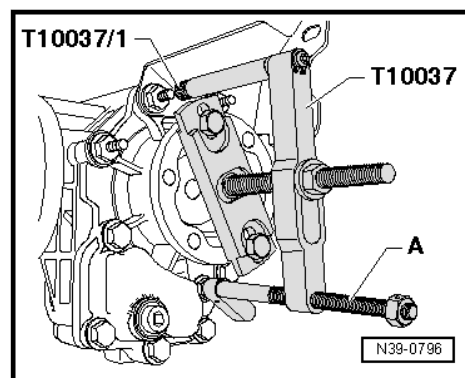
- Remove the nuts -1- and -2- and then remove the particulate filter bracket.

Continuation for All

- Place the drip tray under the transmission.
- Remove the right flange shaft bolt -arrow 1- with the Socket And Extended Bit -T10107 A- and install two bolts in the flange and counter-hold the flange shaft with the pry bar.



- Tighten the Puller - Flanged Shaft -T10037- on right flange shaft.





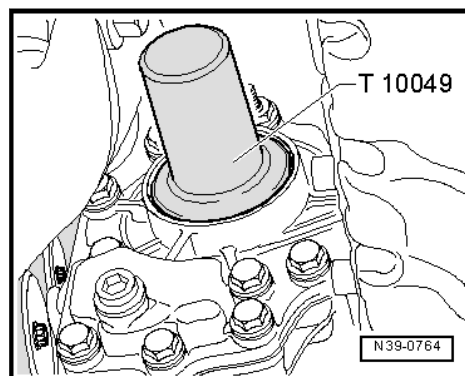
Note

To remove the right flange shaft, use the Puller - Flanged Shaft -T10037- to avoid damaging the flange shaft bearing.

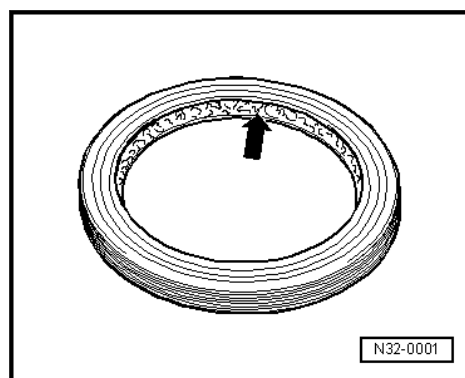
- Place a spacer (for example, Press Piece - Bushing -VW 434-) between the transmission support and the Stub Shaft Counter-Hold Tool - Knurled Nut -T10371/1-.
- Align the Puller - Flanged Shaft parallel to the flange using the Spindle -A-.
- Install the right flange shaft.
- Pry out the flange shaft seal using a lever.

2.2.2 Installing

- Lightly oil the outer edge of the new seal.
- Install the seal all the way in without tilting it.



- Fill the space between the sealing/dust lip -arrow- halfway with Sealing Grease -G 052 128 A1-.



- Carefully drive in the left flange shaft. While doing so turn the flange shaft so that the bearing does not get damaged.
- Fasten the flange shaft with a countersunk bolt and tighten it to the tightening specification -Item 13- ➔ [Item 13 \(page 508\)](#) .

Install in reverse order of removal, while noting the following:

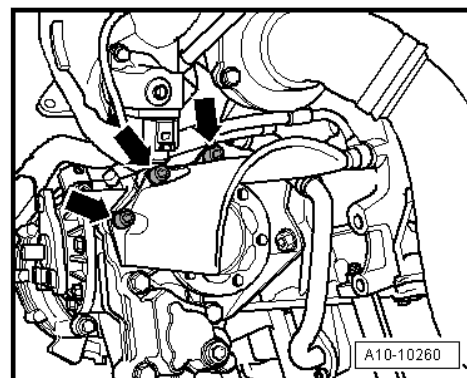
Vehicles with Particulate Filter

- Install the particulate filter bracket. Refer to ➔ Rep. Gr. 26; Exhaust System.



Continuation for All

- Install the right drive axle. Refer to ➤ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axle, Removing and Installing.



- Remove the right drive axle heat shield -arrows-. Refer to ➤ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Shaft Servicing - Drive Shaft Overview.
- Check the gear oil in the bevel box. Refer to ➤ [O10 il in Bevel Box, Checking or Filling](#), page 294 .
- Check the transmission fluid level in the manual transmission. Refer to ➤ [F8 luid, Checking](#), page 252 .
- Install the noise insulation. Refer to ➤ Body Exterior; Rep. Gr. 50; Noise Insulation.
- Install the right front wheel. Refer to ➤ Suspension, Wheels, Steering; Rep. Gr. 44; Wheel Bolts Tightening Specifications.

2.3 Bevel Box Seal, Replacing, with Manual Transmission Installed

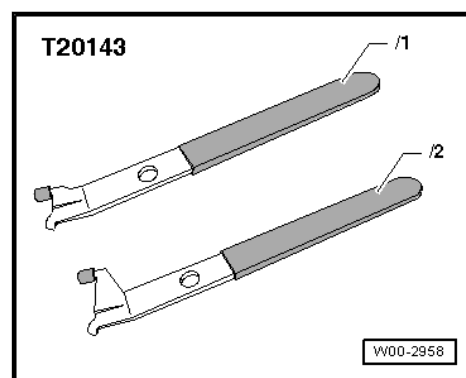


Note

The seal, located between the manual transmission and the bevel box, seals the manual transmission.

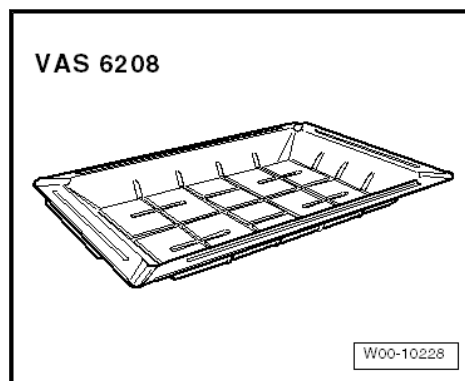
Special tools and workshop equipment required

- ◆ Puller - Crankshaft/Power Steering Seal -T20143/2-

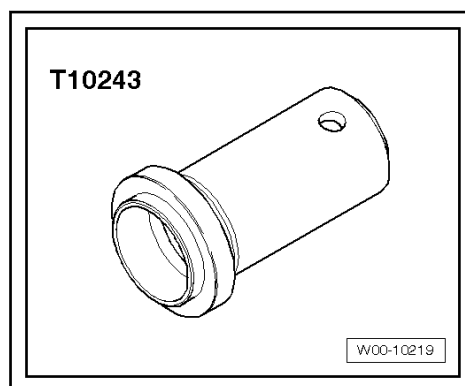




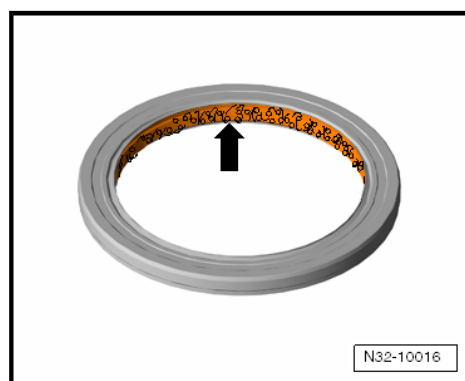
◆ Shop Crane - Drip Tray -VAS 6208-



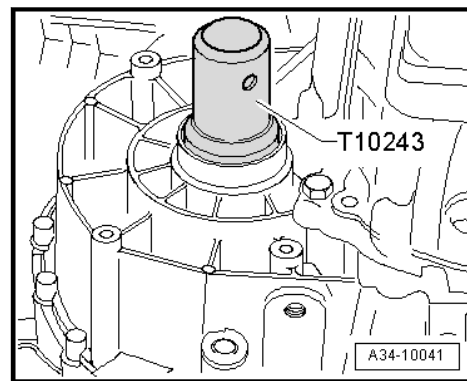
◆ Seal Installer - Bevel Box -T10243-



- Remove the bevel box. Refer to [⇒ B9 ox, Removing and Installing", page 257](#) .
- Place a Drip Tray such as the Shop Crane - Drip Tray -VAS 6208- under the transmission.
- Pry out the bevel box seal using the Puller - Crankshaft/Power Steering Seal - 2 -T20143/2- or Puller - Seal Lever -VW 681-.
- Coat the outer circumference of the new seal with transmission fluid.



- Fill the space between the sealing/dust lip -arrow- halfway with Sealing Grease -G 052 128 A1-.
- Install the seal all the way without tilting it.



- Install the bevel box. Refer to [⇒ B9 ox, Removing and Installing”, page 257](#) .
- Check the gear oil in the bevel box. Refer to [⇒ O10 il in Bevel Box, Checking or Filling”, page 294](#) .
- Check the transmission fluid level in the manual transmission. Refer to [⇒ F8 luid, Checking”, page 252](#) .



3 Overview - Seals, Flange Shaft Bearing and Output Flange Bearing Inside the Bevel Box



1 - Seal

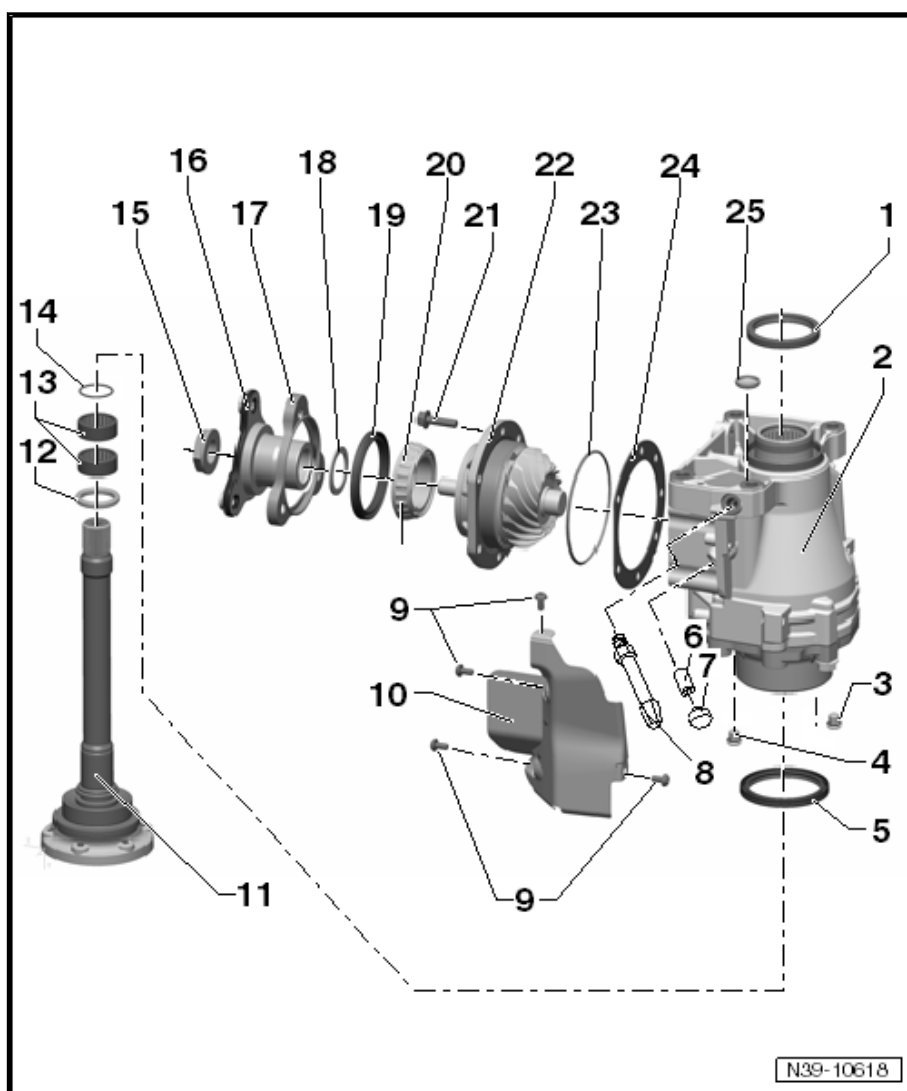
- ☐ Between the bevel box and manual transmission
- ☐ Replace with bevel box removed. Refer to ➤ [03.2 n Bevel Box between Manual Transmission and Bevel Box, Replacing](#), page 473.

2 - Bevel Box

- ☐ Removing and installing with transmission installed. Refer to ➤ [B9 ox, Removing and Installing](#), page 257.
- ☐ Removing and installing with transmission removed. Refer to ➤ [B3.1 ox, Removing and Installing, Manual Transmission Removed](#), page 471.

3 - Drain Plug, 15 Nm

- ☐ Replace after removing
- ☐ With permanent seal



Note

- ◆ On some bevel boxes an oil drain plug can be installed with M20 x 1.5 threads.
- ◆ The tightening specification for the bolt is 60 Nm.

4 - Filler Plug, 15 Nm

- ☐ Replace after removing
- ☐ With permanent seal

5 - Seal

- ☐ For the right flange shaft
- ☐ Replace with manual transmission installed with bevel box. Refer to ➤ [F2.2 lange Shaft Seal, Replacing](#), page 461.

6 - Bleed Pipe

- ☐ For bleeding the bevel box
- ☐ Press it in all the way

7 - Cap

- ☐ For bleeding the bevel box



8 - Bleed Pipe, 10 Nm

- ☐ Bevel box venting approximately through 12/2005
- ☐ Allocate the parts according to the ⇒ Electronic Parts Catalog (ETKA).

9 - Bolt, 5 Nm

10 - Heat Shield

- ☐ Not equipped on all bevel boxes
- ☐ The shape may look different than the illustration.
- ☐ Allocate the parts according to the ⇒ Electronic Parts Catalog (ETKA).

11 - Right Flange Shaft

- ☐ Removing and Installing. Refer to ⇒ [F2.2 lange Shaft Seal, Replacing", page 461](#) .

12 - Seal

- ☐ To replace, remove the needle bearing (polygon bearing -Item 13- ⇒ [Item 13 \(page 470\)](#)

13 - Needle Bearing (Polygon Bearing)

- ☐ Replacing. Refer to ⇒ [B3.5 earing \(Polygon Bearing\) and Seal on Right Flange Shaft, Replacing", page 487](#) .

14 - Circlip

- ☐ Replace after removing
- ☐ For the needle bearing (polygon bearing)
- ☐ Insert into the surrounding right flange shaft groove

15 - Hex Nut, 480 Nm

- ☐ Removing. Refer to ⇒ [Fig. "“Remove hex nut for the output flange.”", page 479](#) .
- ☐ Install with Locking Fluid -D 000 600-.
- ☐ Installing. Refer to ⇒ [Fig. "“Coat the threads of the new hex head nut with Locking Compound -D 000 600-.”", page 486](#) .

16 - Output Flange

- ☐ Removing and installing with bevel box removed. Refer to ⇒ [B3.3 ox Output Flange Seal, Replacing, Bevel Box Removed", page 474](#) .

17 - Cap

- ☐ Lock with the output flange

18 - Shim

- ☐ When replacing the output flange, redetermine the thickness. Refer to ⇒ [F3.4 lange, Replacing and Determining New Output Flange Shim, Bevel Box Removed", page 487](#) .

19 - Seal

- ☐ For the output flange
- ☐ Replace with bevel box removed. Refer to ⇒ [B3.3 ox Output Flange Seal, Replacing, Bevel Box Removed", page 474](#) .

20 - Inner Race/Tapered Roller Bearing

- ☐ The component is not a replacement part

21 - Bolt, 25 Nm

22 - Pinion Housing

- ☐ With shaft bevel gear and outer race/tapered roller bearing
- ☐ Components are not replacement parts
- ☐ Carefully pry out from side to side
- ☐ Note the fastening holes; the pinion housing only fits in one position.

23 - O-Ring

- ☐ To replace, remove the bolts -Item 21- ⇒ [Item 21 \(page 470\)](#) and carefully pry the pinion housing out at the tabs protruding all the way around.



- ❑ Do not remove the hex nut -Item 15- ➤ [Item 15 \(page 470\)](#) and output flange -Item 16- ➤ [Item 16 \(page 470\)](#) .

24 - Shim

- ❑ The component is not a replacement part
- ❑ Note the bevel box fastening holes; the shim only fits in one position

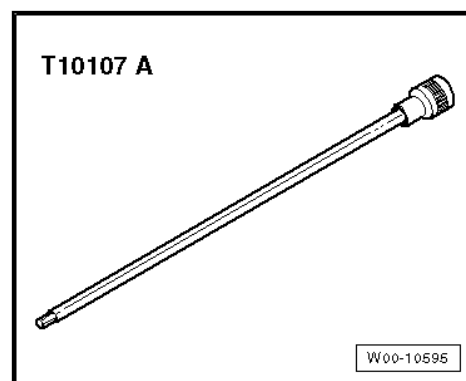
25 - Cap

- ❑ Drive in until stop using the Holding Fixture - Spacers -VW 540/1B-

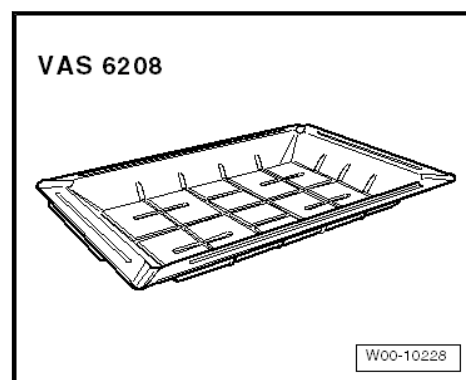
3.1 Bevel Box, Removing and Installing, Manual Transmission Removed

Special tools and workshop equipment required

- ◆ Socket and Extended Bit -T10107 A-



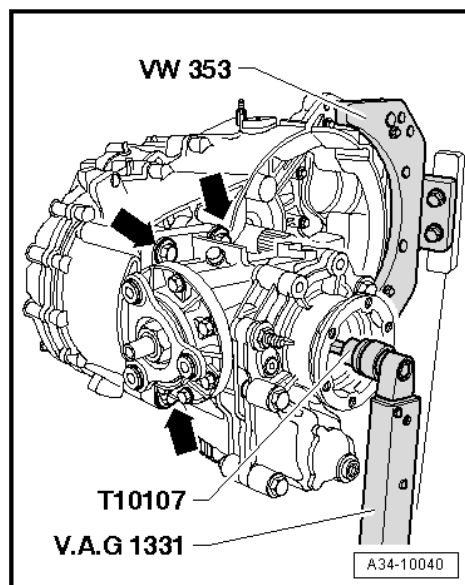
- ◆ Shop Crane - Drip Tray -VAS 6208-



Note

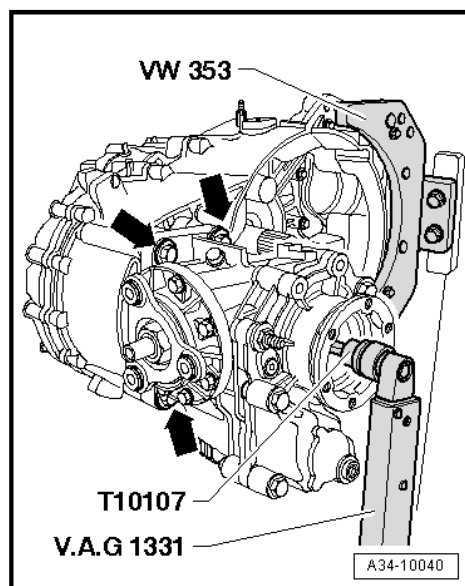
Secure the transmission on the assembly stand. Refer to ➤ [S7 securing to Engine/Transmission Holder](#), page 250 .

Bevel box, attaching to manual transmission as follows:



- Place a Workshop Crane Drip Tray for example Shop Crane - Drip Tray -VAS 6208- underneath.
- Remove right flange shaft countersunk screw with Socket and Extended Bit -T10107- or -T10107A-.
- Remove the four bolts -arrows- (only three bolts are shown in the illustration) that attach the bevel box to the manual transmission.
- Carefully press bevel box off the manual transmission while protecting it against falling.

Install the bevel box as follows on the manual transmission:



- Slide on bevel box completely on manual transmission, while doing this, join drive axle/bevel box splines centrally with the differential.
- Line up the splines on the right flange shaft with the differential bevel gear. Turn the flange shaft if necessary.
- With proper tooth position and central guiding, bevel box slides up to stop against manual transmission.



Caution

Risk of destroying the bevel box housing.

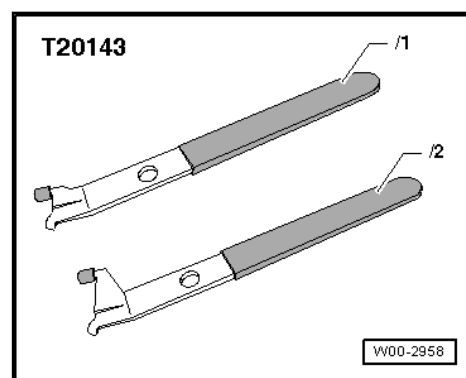
- ◆ *Do not pull bevel box with mounting bolts against manual transmission, otherwise bevel box is canted and mounting eyelets can break off.*

- Tighten the four bolts -arrows- (only three bolts are shown in the illustration) that attach the bevel box to the manual transmission; tightening specification -Item 17- ➔ [Item 17 \(page 314\)](#)
- Tighten the right flange shaft countersunk screw with Socket and Extended Bit -T10107- or -T10107A-. Tightening specification -Item 13- ➔ [Item 13 \(page 508\)](#).

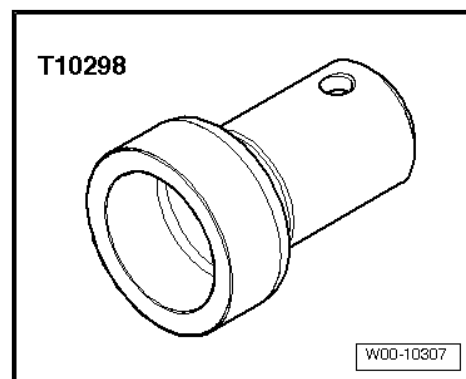
3.2 Gasket on Bevel Box between Manual Transmission and Bevel Box, Replacing

Special tools and workshop equipment required

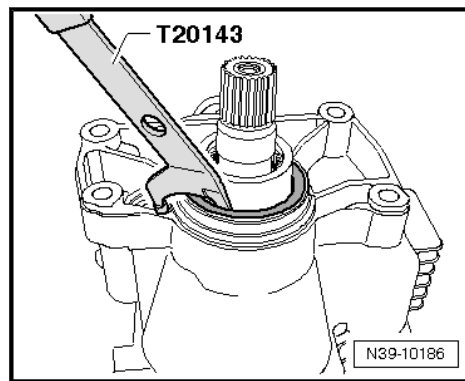
- ◆ Puller - Crankshaft/Power Steering Seal -T20143-



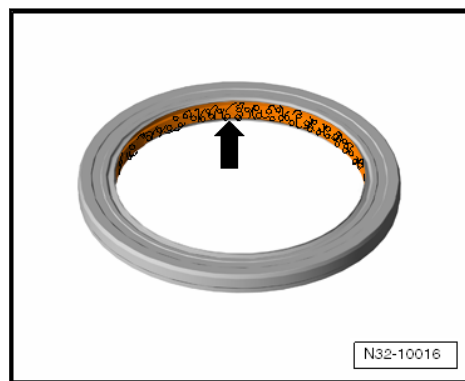
- ◆ Seal Installer - Bevel Box -T10298-



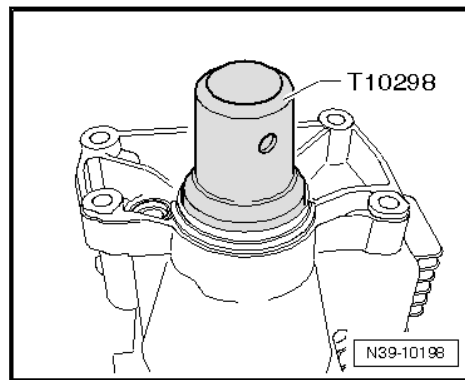
- Remove the bevel box. Refer to ➔ [B9 ox, Removing and Installing", page 257](#).
- Remove the gasket using the Puller - Crankshaft/Power Steering Seal - 1 -T20143/1- or Puller - Crankshaft/Power Steering Seal - 2 -T20143/2-.



- Coat the outer circumference of the new seal with transmission fluid.



- Fill the space between the sealing/dust lip -arrow- halfway with Sealing Grease -G 052 128 A1-.
- Drive the seal all the way in using the Seal Installer - Bevel Box -T10298-. Do not tilt it while doing so.

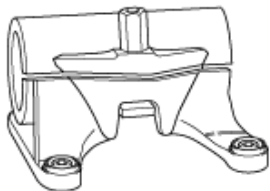
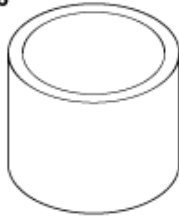
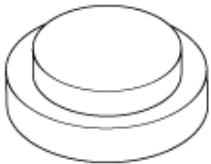
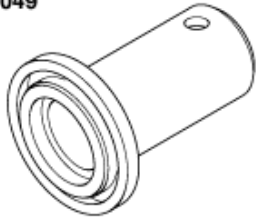
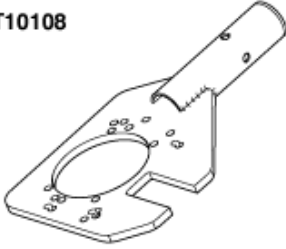
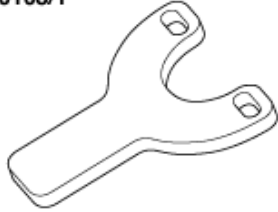


- Install the bevel box. Refer to [⇒ B9 ox, Removing and Installing”, page 257](#) .
- Check the gear oil in the bevel box. Refer to [⇒ O10 il in Bevel Box, Checking or Filling”, page 294](#) .
- Check the transmission fluid level in the manual transmission. Refer to [⇒ F8 luid, Checking”, page 252](#) .

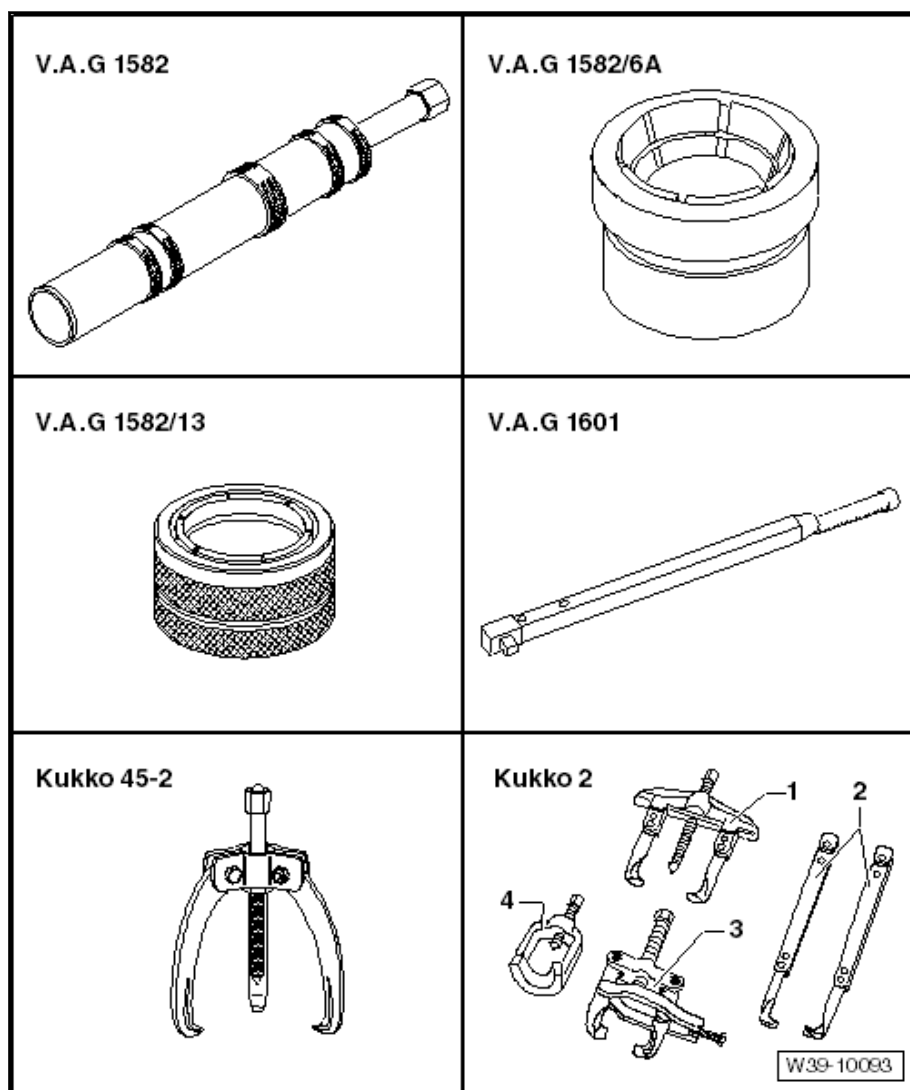
3.3 Bevel Box Output Flange Seal, Replacing, Bevel Box Removed



Special tools and workshop equipment required

<p>VW 313</p> 	<p>VW 516</p> 
<p>40-105</p> 	<p>T10049</p> 
<p>T10108</p> 	<p>T10108/1</p>  <p>W39-0385</p>

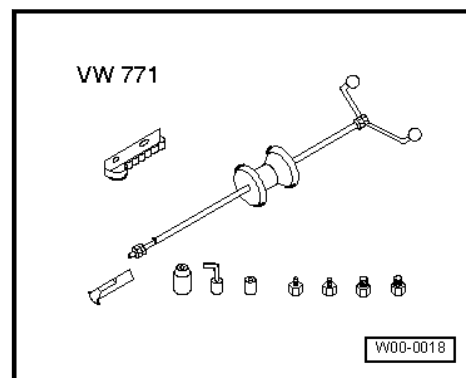
- ◆ Holding Fixture -VW 313-
- ◆ Press Piece - 42mm -VW 516-
- ◆ Press Piece - Multiple Use -40 - 105-
- ◆ Seal Installer - Flange Shaft -T10049-
- ◆ Gearbox Support -T10108-
- ◆ Gearbox Support -T10108/1-



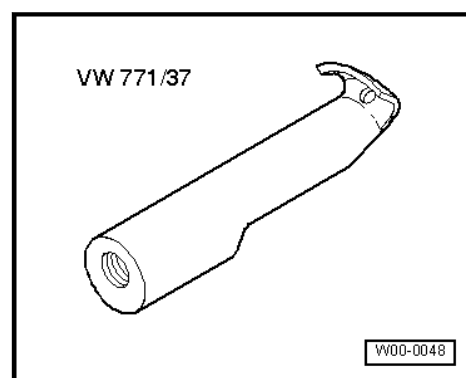
- ◆ Puller - Taper Roller Bearing -V.A.G 1582- with a short sleeve
- ◆ Seal is located in the pinion housing. Refer to ➤ [Fig. "“Output Flange Seal in Pinion Housing, Removing and Installing.”", page 481](#) . Puller - Taper Roller Bearing - Adapter 6 -V.A.G 1582/6- or Puller - Taper Roller Bearing - Adapter 6A -V.A.G 1582/6A-
- ◆ -1- Two-Arm Puller -VAS251001-
- ◆ Seal is located on the output flange. Refer to ➤ [Fig. "“Output Flange Seal -arrow-, Removing and Installing.”", page 483](#) . Puller - Taper Roller Bearing - Adapter 13 -V.A.G 1582/13-
- ◆ Continuation for All
- ◆ Torque Wrench 1601 -V.A.G 1601-
- ◆ Three-Arm Puller -VAS 251205-
- ◆ Only for the seal in the pinion housing. Refer to ➤ [Fig. "“Output Flange Seal in Pinion Housing, Removing and Installing.”", page 481](#) .



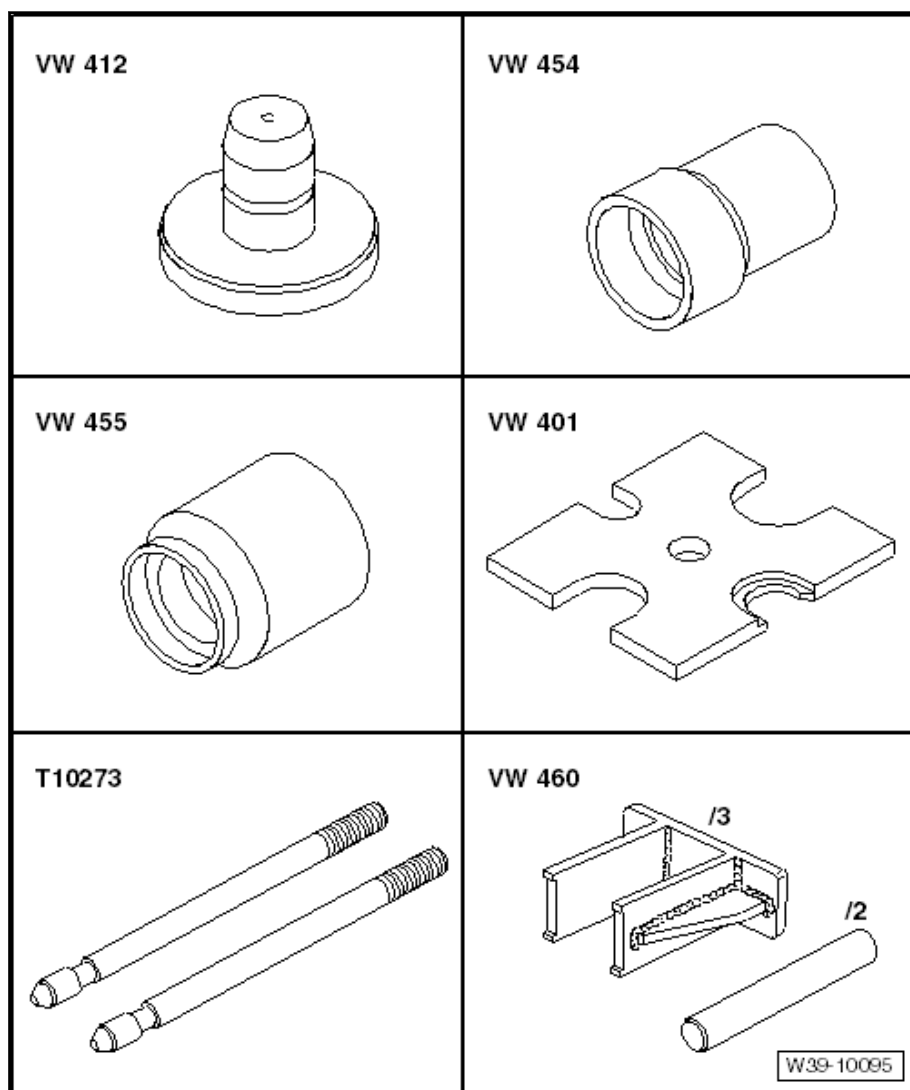
◆ Slide Hammer Set -VW 771-



- ◆ Only for the seal in the pinion housing. Refer to ➤ [Fig. "Output Flange Seal in Pinion Housing, Removing and Installing:"](#), page 481 .



◆ Slide Hammer Set - Hook -VW 771/37-



- ◆ The seal is located on the output flange. Refer to ➤ [Fig. "Output Flange Seal -arrow-, Removing and Installing:", page 483](#).
- ◆ Press Piece - Multiple Use -VW 412-
- ◆ Press Piece - Multiple Use -VW 454-
- ◆ Press Piece - Multiple Use -VW 455-
- ◆ Press Plate -VW 401-
- ◆ Two M8 x 30 mm stud bolts or Guide Pins - M8 -T10273-
- ◆ Removal Device Pin 2 -VW 460/2-

Continuation for All

Sealing Grease -G 052 128 A1-

Locking Fluid -D 000 600-

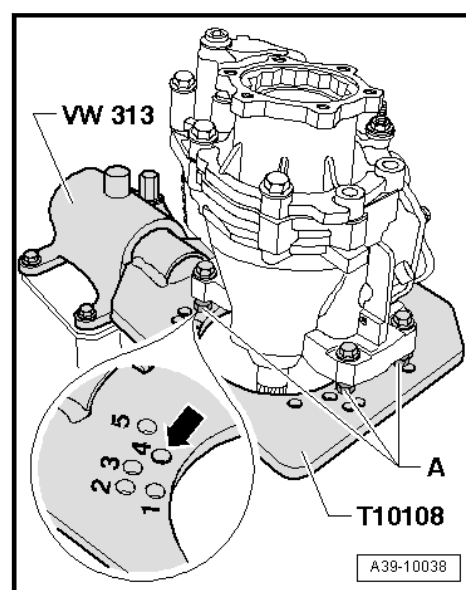
Two M10 x 30 bolts

Four M12 x 10 nuts



Note

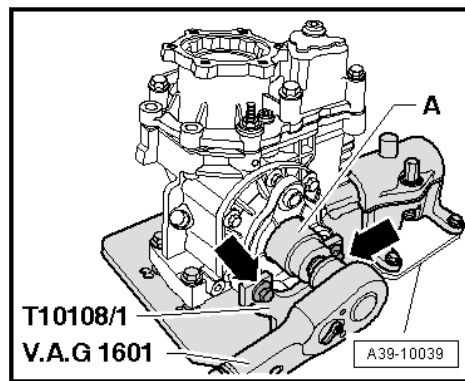
- ◆ *Bevel box output flange seal can only be replaced with the bevel box removed.*
- ◆ *An inner race/tapered roller bearing is located on the bevel box output flange.*
- ◆ *This is removed later in the procedure.*
- ◆ *Do not replace the tapered roller bearing for the bevel box output flange and the shims.*
- Remove the bevel box. Refer to [⇒ B9 ox, Removing and Installing](#), page 257 .
- Mount the bevel box on the hole -arrow- marked with the number -4- in the Gearbox Support -T10108-.



A - Insert the M12 x 10 nut (quantity: 4) between bevel box and Transmission Holder.

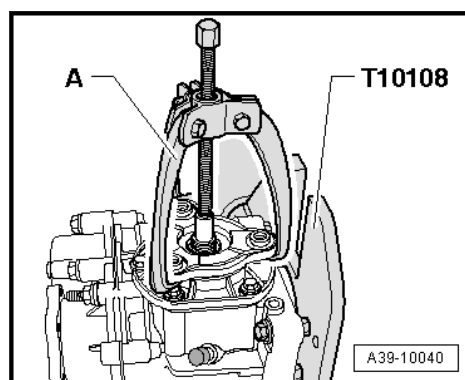
- Then align the bevel box to the remaining three holes and secure.
- Place a drip tray underneath.
- Drain the gear oil out of the bevel box.
- Install two M 10 x 30 bolts -arrows- to stop the output flange for the bevel box with the Gearbox Support Stop Plate -T10108/1-.

Remove hex nut for the output flange.



A - 36 mm Socket for 3/4 Inch Drive

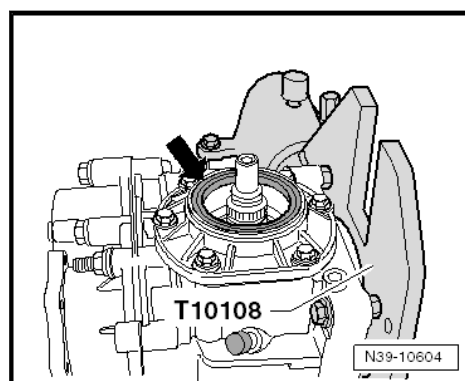
- Pivot the bevel box so that the output flange faces upward.



- Remove the output flange and bearing inner race/tapered roller bearing from the bevel box shaft bevel gear.

A - Three-Arm Puller, for example -VAS251205-

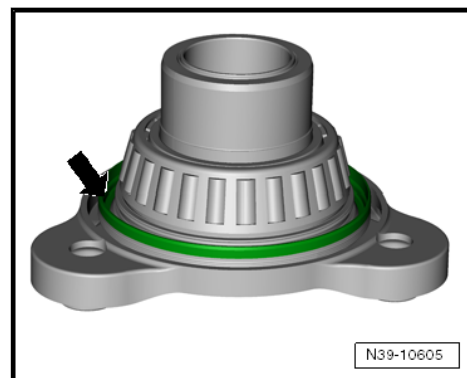
- Note the different component locations for the output flange seals:



The output flange seal -arrow- is located inside the pinion housing.

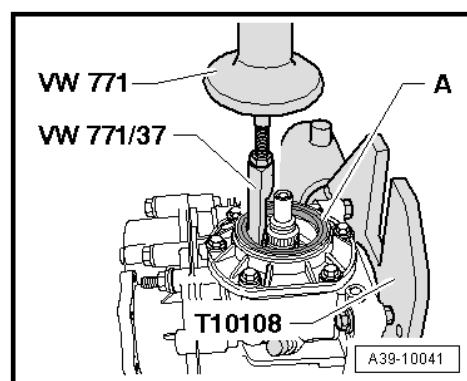
Output Flange Seal in Pinion Housing, Removing and Installing.
Refer to ➤ [Fig. "Output Flange Seal in Pinion Housing, Removing and Installing:", page 481](#) .

The seal -arrow- is located on the output flange.



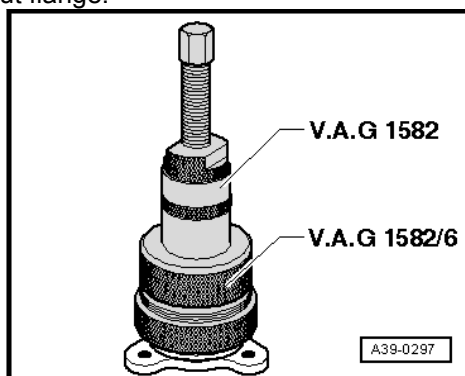
Output Flange Seal, Removing and Installing. Refer to ➤ Fig. [““Output Flange Seal -arrow-, Removing and Installing:”, page 483](#).

Output Flange Seal in Pinion Housing, Removing and Installing:



Seal, Removing.

- Remove the output shaft seal -A-.
- The bearing inner race/tapered roller bearing must be removed from the output flange:



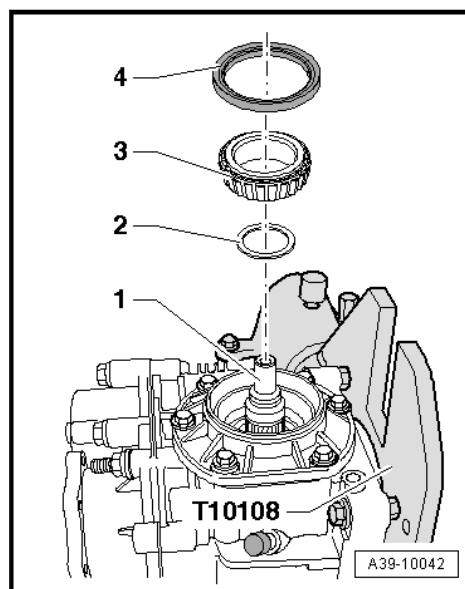
- Place the Press Piece - Multiple Use -40-105- on the output flange.
- Remove the inner race/tapered roller bearing from output flange with the Tapered Roller Bearing Puller.



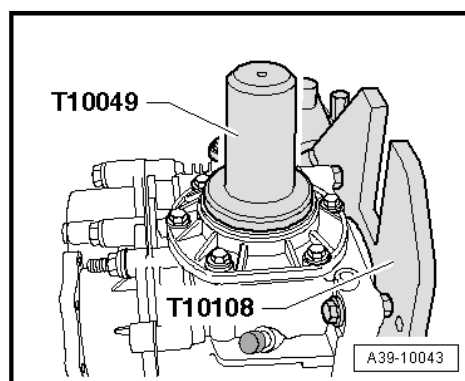
Note

Instead of the Puller - Taper Roller Bearing - Adapter 6 -V.A.G 1582/6-, the Puller - Taper Roller Bearing - Adapter 6A -V.A.G 1582/6A- can be used.

Install the seal and output flange.



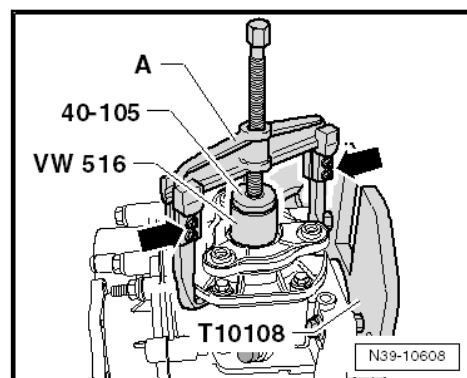
- Cover the pinion housing with a lint-free cloth.
- Clean any remaining locking fluid from the thread on the shaft bevel gear.
- If the shim -2- was also removed when removing the output flange, it must be reinstalled in the pinion housing.
- This will maintain the bearing pre-load on the shaft bevel gear -1- inside the pinion housing.
- Place the old bearing inner race/tapered roller bearing -3- into the outer race/tapered roller bearing inside the bevel box.
- Lightly lubricate the outer diameter of the new seal -4- for the output flange.
- Drive in the new seal using the Seal Installer - Flange Shaft -T10049-.



- The seal must be flush with the upper edge of the housing.



- Fill the space between the sealing/dust lip halfway with Sealing Grease -G 052 128 A1-.
- Install the output flange using the Two-Arm Puller -A-.

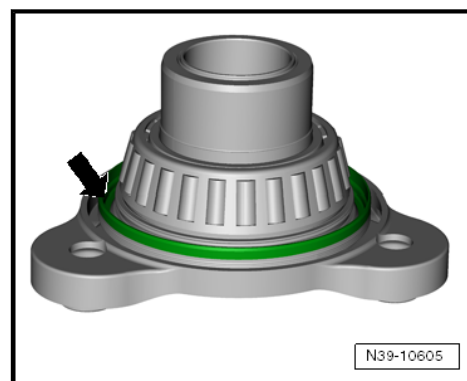


A - Two-Arm Puller, for example, Two-Arm Puller -VAS251001-

Note the following:

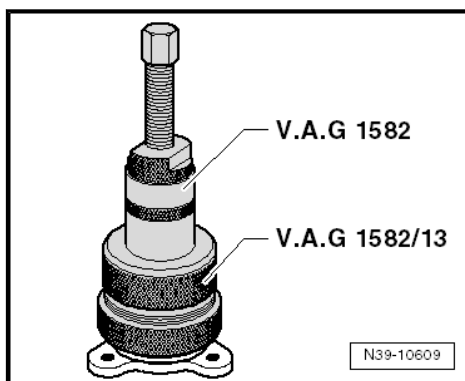
- Do not use any damaged tools.
- The output flange must not be bent when removing the shaft bevel gear.
- Mount the hooks on the bottom of the pinion housing.
- Tension the removal hook with the Two-Arm Puller -arrows-.
- Do not bend the removal hook outward.
- Interrupt the procedure if necessary, remove the output flange again and repeat the process.

Output Flange Seal -arrow-, Removing and Installing:



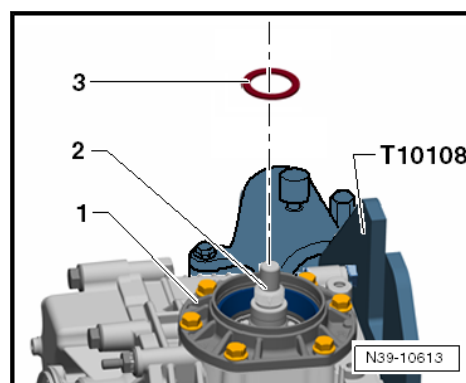
Seal, Removing.

- When removing the output flange seal, the inner race/tapered roller bearing must also be removed.

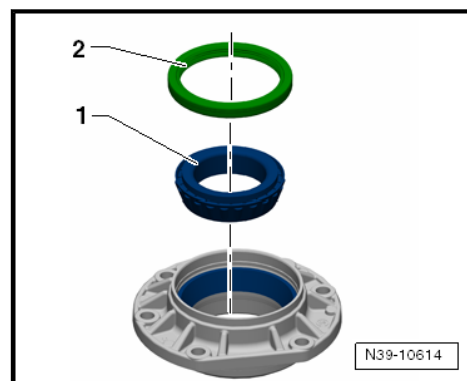


- Place the Press Piece - Multiple Use -40-105- on the output flange.
- Remove the inner race/tapered roller bearing from output flange with the Tapered Roller Bearing Puller.
- Remove the output flange seal.

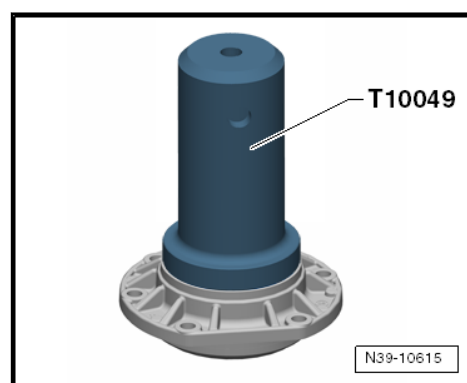
Seal, Installing.



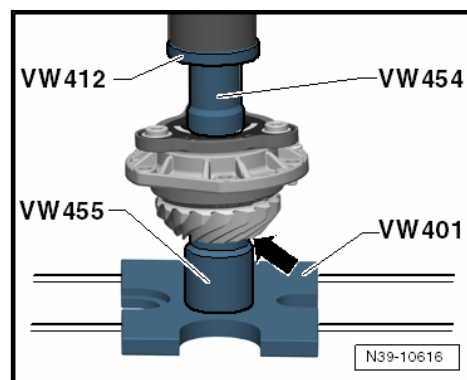
- First remove the pinion housing -1- along with the shaft bevel gear -2- in order to install the seal:
- Remove the bolts for the pinion housing -1-; and carefully remove the pinion housing diagonally off the protruding edges.
- Remove the pinion housing and the shaft bevel gear -2-.
- Clean the thread on the shaft bevel gear.
- If the shim -3- was also removed when removing the output flange, it must be reinstalled in the pinion housing.
- This will maintain the bearing pre-load on the shaft bevel gear inside the pinion housing.
- Place the old inner race/tapered roller bearing -1- into the pinion housing.



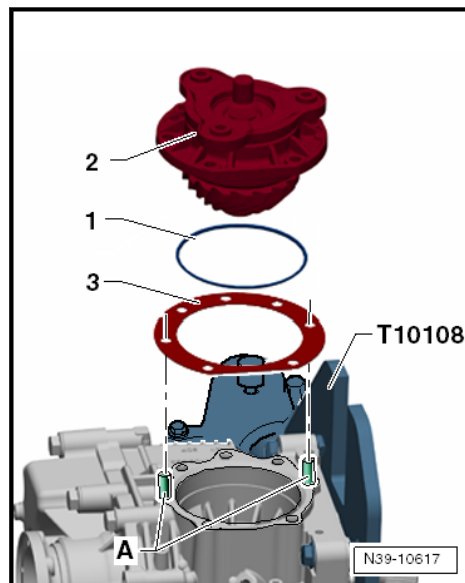
- Lightly lubricate the outer diameter of the new output flange seal -2-.
- Drive in the new seal using the Seal Installer - Flange Shaft -T10049-.



- The seal must be flush with the upper edge of the housing.
- Fill the space between the sealing and dust lip of the seal halfway with Sealing Grease -G 052 128 A1-.
- Press the output flange all the way in along with the pinion housing and shaft bevel gear.



- The shoulder -arrow- of the Press Piece - Multiple Use -VW 455- points to the shaft bevel gear.
- Install the stud bolts M8 X 30 mm = -A- or Guide Pins - M8 -T10273- into the axle drive housing.



- Slide a new O-Ring -1- onto the pinion housing -2-.
- The pinion housing -2- and shim -3- only fit in one position.
- Install the previous shim -3-.
 - Carefully install the pinion housing diagonally all the way with Removal Device Pins 2 -VW 460/2-.

There is very little space between the pinion housing and the bevel box housing.

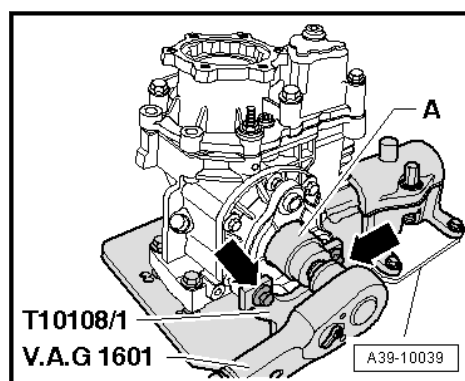
The gap is closed when the pinion housing is tightened.

- Tighten the bolts for the pinion housing -2- diagonally.

Tightening Specification. Refer to ➤ [Item 21 \(page 470\)](#) .

Continuation for All

Coat the threads of the new hex head nut with Locking Compound -D 000 600-.



- Tighten new output flange hex head nut.

Tightening Specification. Refer to -Item 15- ➤ [Item 15 \(page 470\)](#) .

A - 36 mm Socket for 3/4 Inch Drive

- Install the bevel box. Refer to ➤ [B9 ox, Removing and Installing”, page 257](#) .
- Check the gear oil in the bevel box. Refer to ➤ [O10 il in Bevel Box, Checking or Filling”, page 294](#) .

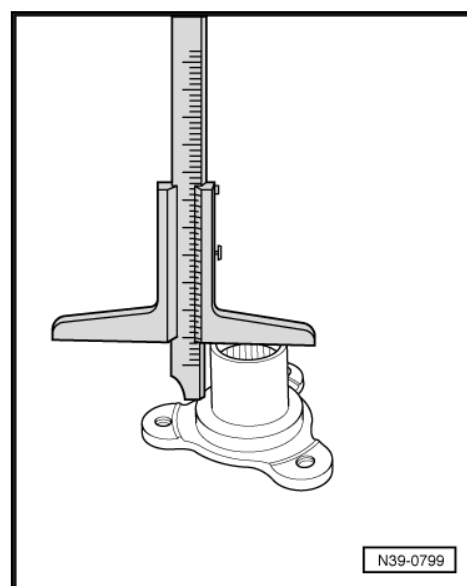


3.4 Output Flange, Replacing and Determining New Output Flange Shim, Bevel Box Removed

- Remove the output flange and, if necessary, remove the bearing inner race/tapered roller bearing from the output flange. Refer to ➤ [B3.3 ox Output Flange Seal, Replacing, Bevel Box Removed](#), page 474 .

This adjustment is only necessary when the output flange is being replaced. This creates the preload on the tapered roller bearing for the shaft bevel gear.

- Measure the length of the shaft on the old and new output flange to get the difference.



Example:	
Old output flange	42.90 mm
New output flange	43.00 mm
Difference	0.10 mm

If the new output flange is longer- install a thinner shim.

If the previously mentioned output flange is longer- install a thicker shim.

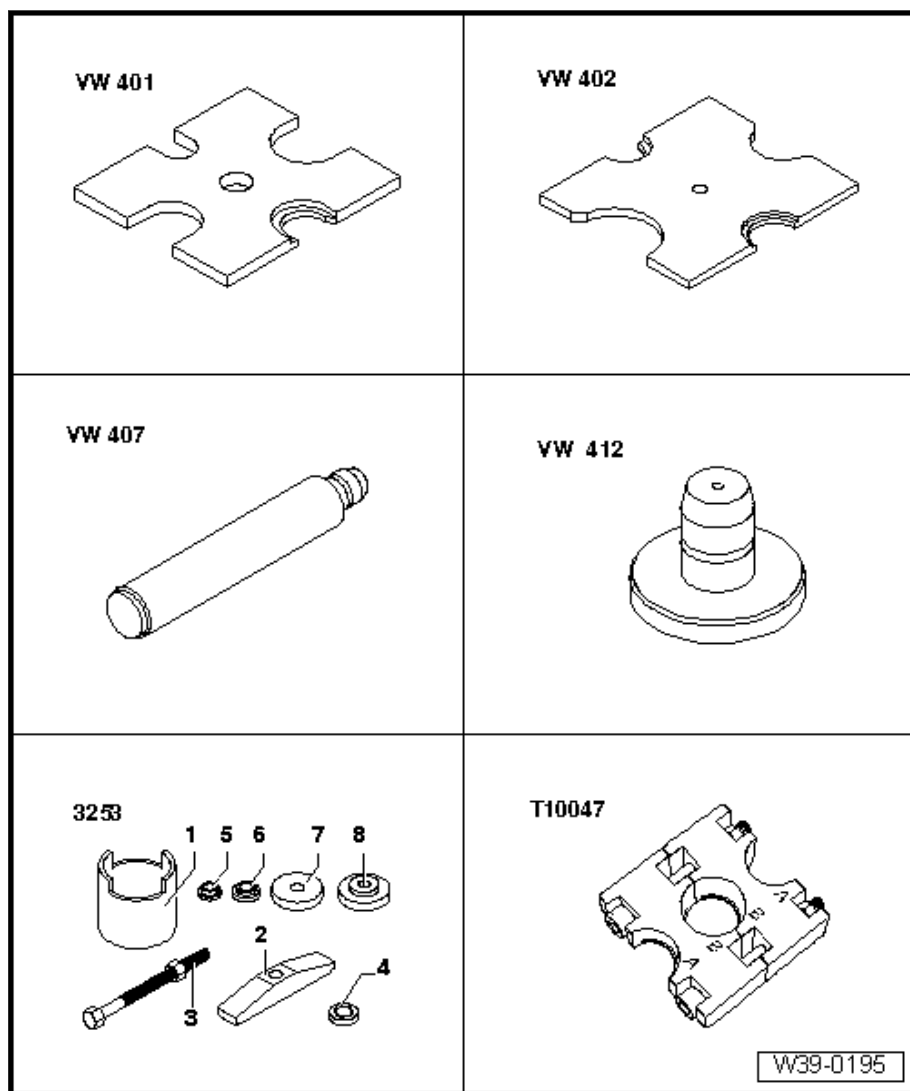
Refer to the ➤ Electronic Parts Catalog (ETKA) for the allocation.

- Install the output flange. Refer to ➤ [B3.3 ox Output Flange Seal, Replacing, Bevel Box Removed](#), page 474 .

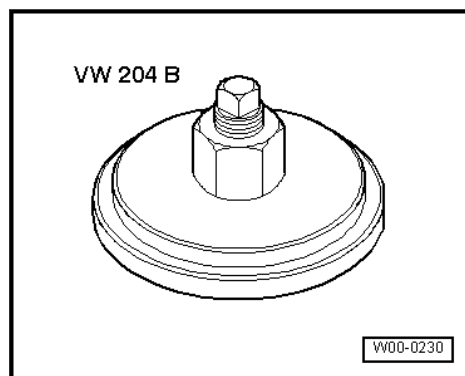
3.5 Needle Bearing (Polygon Bearing) and Seal on Right Flange Shaft, Replacing



**Special tools and workshop
equipment required**

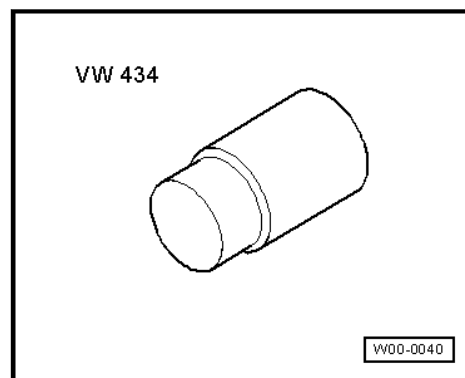


- ◆ Press Plate -VW 401-
- ◆ Press Plate -VW 402-
- ◆ Press Piece - Rod -VW 407-
- ◆ Press Piece - Multiple Use -VW 412-
- ◆ Bearing Installer - Rear Wheel Bearing Kit -VAS 3253-
- ◆ Bearing Installer - Needle Bearing -T10047-
- ◆ Seal Installer - Crankshaft -VW 204 B-

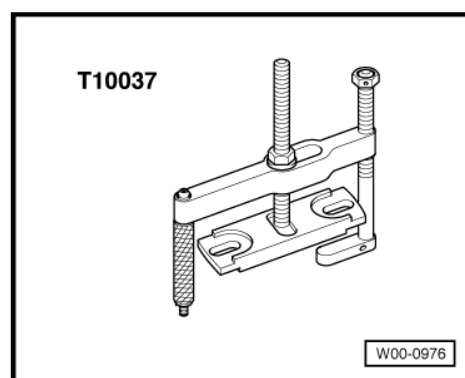




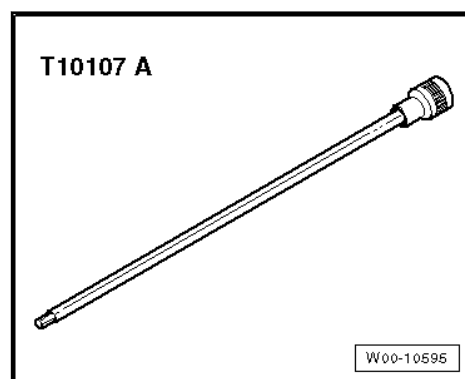
◆ Press Piece - Bushing -VW 434-



◆ Puller - Flanged Shaft -T10037-

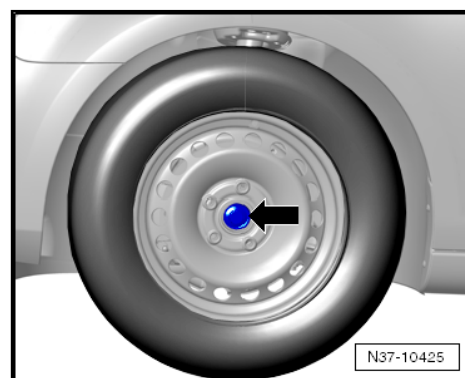


◆ Socket and Extended Bit -T10107 A-



3.5.1 Removing

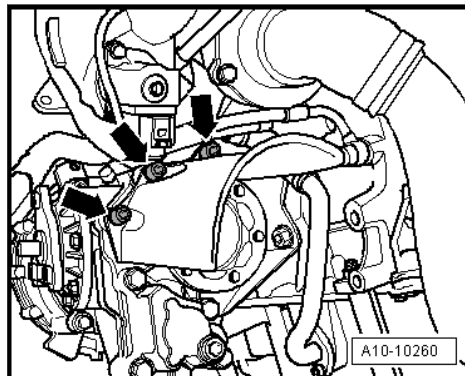
The right drive axle must be removed later in the procedure.



- With the vehicle still standing on its wheels, loosen the right front collar bolt -arrow- a maximum 90°, otherwise the wheel bearing will get damaged. Refer to ➔ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axles, Removing and Installing.

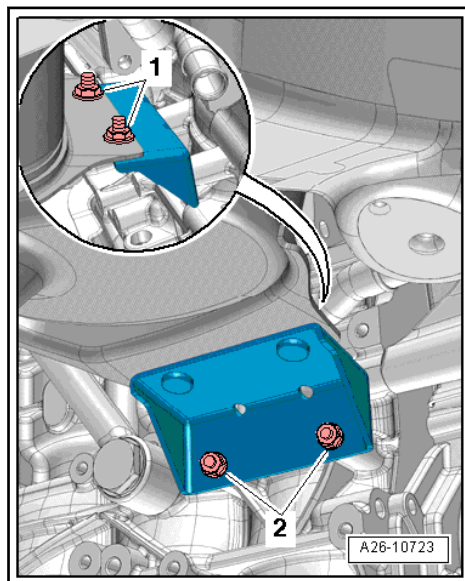


- Remove the right front wheel.
- Remove the noise insulation under the engine/transmission, if equipped. Refer to ➤ Body Exterior; Rep. Gr. 50; Noise Insulation.
- Remove the drive axle heat shield from the bevel box -arrows-.



- Remove the right drive axle. Refer to ➤ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axles, Removing and Installing.

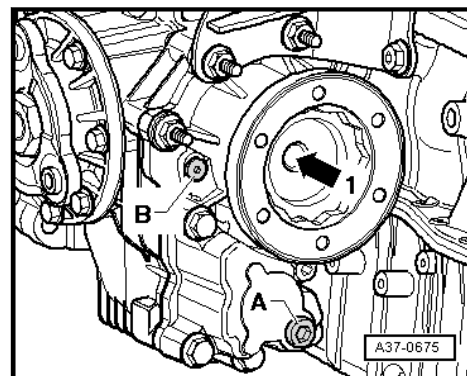
Vehicles with Particulate Filter



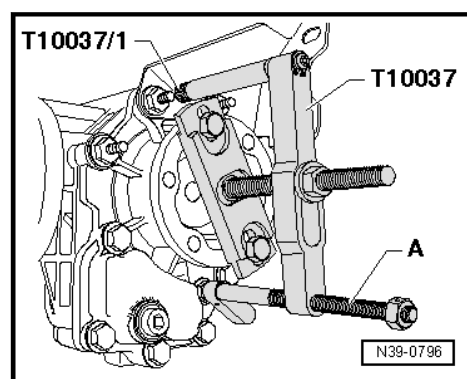
- Remove the nuts -1- and -2- and then remove the particulate filter bracket.

Continuation for All

- Place the drip tray under the transmission.
- Remove the right flange shaft bolt -arrow 1- with the Socket And Extended Bit -T10107 A- and install two bolts in the flange and counter-hold the flange shaft with the pry bar.



- Tighten the Puller - Flanged Shaft -T10037- on right flange shaft.

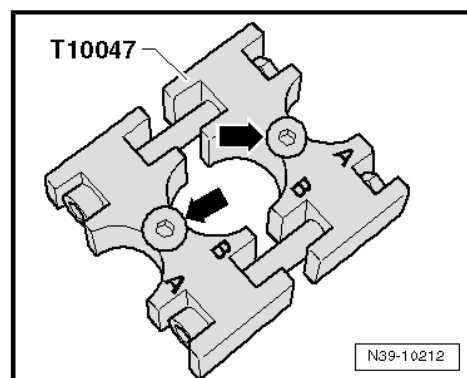


Note

To remove the right flange shaft, use the Puller - Flanged Shaft -T10037- to avoid damaging the flange shaft bearing.

- Place a spacer (for example, Press Piece - Bushing -VW 434-) between the transmission support and the Stub Shaft Counter-Hold Tool - Knurled Nut -T10371/1-.
- Align the Puller - Flanged Shaft parallel to the flange using the Spindle -A-.
- Install the right flange shaft.

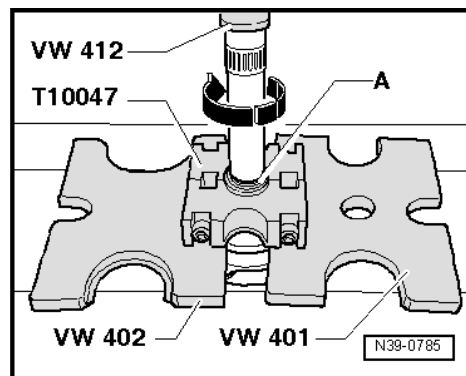
Attach the Bearing Installer - Needle Bearing -T10047-, as shown in the illustration, to the flange shaft.



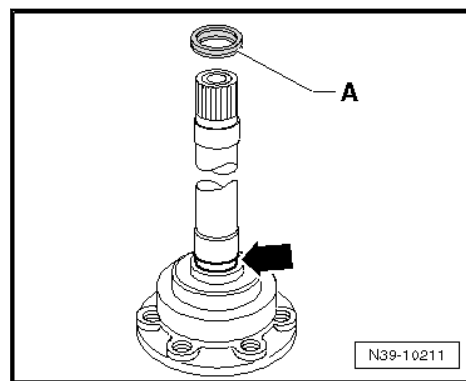
- The markings “B” on both parts face each other.
- The depressions -arrows- must be under the bearing.



- Bolt the parts together all the way.
- Remove the locking ring -A- out of the needle bearing.

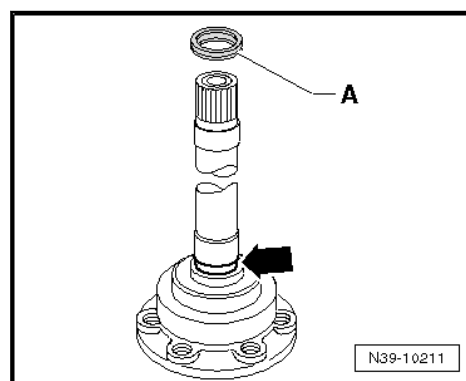


- So that the bearing contact surface on shaft is not damaged, shaft must be rotated during the pressing procedure -arrow-.



- Remove the old seal -A- from the groove -arrow-.

3.5.2 Installing



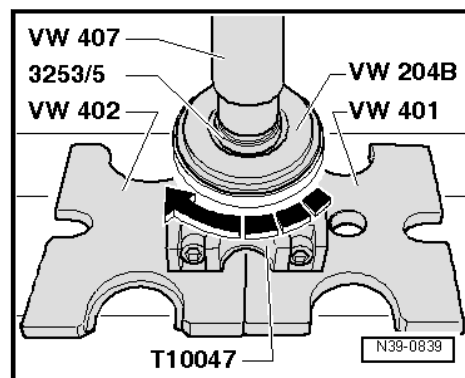
- Coat the new seal -A- with transmission fluid and insert in the groove -arrow- on the flange shaft.



Note

Make sure seal is not tilted.

- Attach the Bearing Installer - Needle Bearing -T10047- to the flange shaft. Refer to ➔ [page 491](#) .
- So that the bearing contact surface on shaft is not damaged, shaft must be rotated during the pressing procedure -arrow-.



- Secure the needle bearing with a new circlip.
- Carefully install the flange shaft while rotating it at the same time.
- Fasten the flange shaft with a countersunk bolt and tighten it to the tightening specification ➔ [Item 13 \(page 508\)](#).

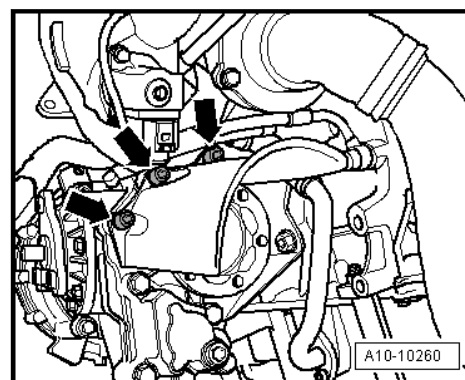
Install in reverse order of removal, while noting the following:

Vehicles with Particulate Filter

- Install the particulate filter bracket. Refer to ➔ Rep. Gr. 26; Exhaust System.

Continuation for All

- Install the right drive axle. Refer to ➔ Suspension, Wheels, Steering; Rep. Gr. 40; Drive Axle, Removing and Installing.
- Attach the right drive axle heat shield to the bevel box -arrows- and tighten it to the tightening specification. Refer to ➔ [S9.1.3 specifications", page 268](#).



- Check the gear oil in the bevel box. Refer to ➔ [O10 il in Bevel Box, Checking or Filling", page 294](#).
- Check the transmission fluid level in the manual transmission. Refer to ➔ [F8 luid, Checking", page 252](#).
- Install the noise insulation. Refer to ➔ Body Exterior; Rep. Gr. 50; Noise Insulation.
- Install the right front wheel. Refer to ➔ Suspension, Wheels, Steering; Rep. Gr. 44; Wheel Bolts Tightening Specifications.



4 Adjustment Overview



Note

When performing assembly work on the transmission a readjustment of the output shaft for 1st to 4th gears, output shaft for 5th/6th gears and reverse gears or differential is only required if components that directly influence the transmission adjustment, have been replaced. Refer to the following table to avoid any unnecessary adjustments:

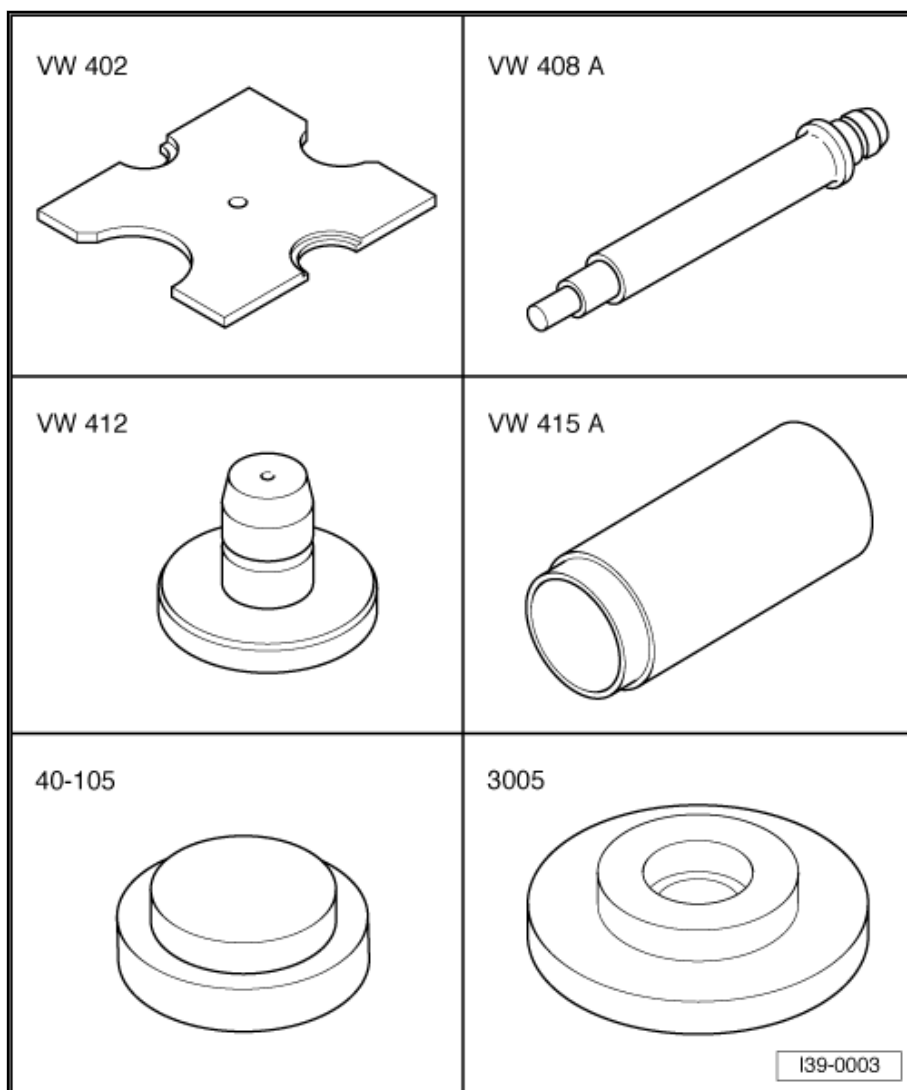
	1st to 4th gear output shaft. Refer to ⇒ t2.3 through 4th Gear Output Shaft, Adjusting , page 428 .	To be adjusted: 5th/6th and reverse gear output shaft. Refer to to ⇒ a3.3 nd Reverse Gear Output Shaft, Adjusting , page 448 .	Differential . Refer to ⇒ A5.3 djusting , page 513 .
Replaced Transmission Housing part:	x	x	x
Clutch Housing	x	x	x
1st through 4th Gear Output Shaft	x		
5th, 6th and Reverse Gear Output Shaft		x	
Differential Housing			x
Tapered roller bearing for 1st to 4th gear output shaft	x		
Tapered roller bearing for 5th/6th and reverse gear output shaft		x	
Differential tapered roller bearing			x



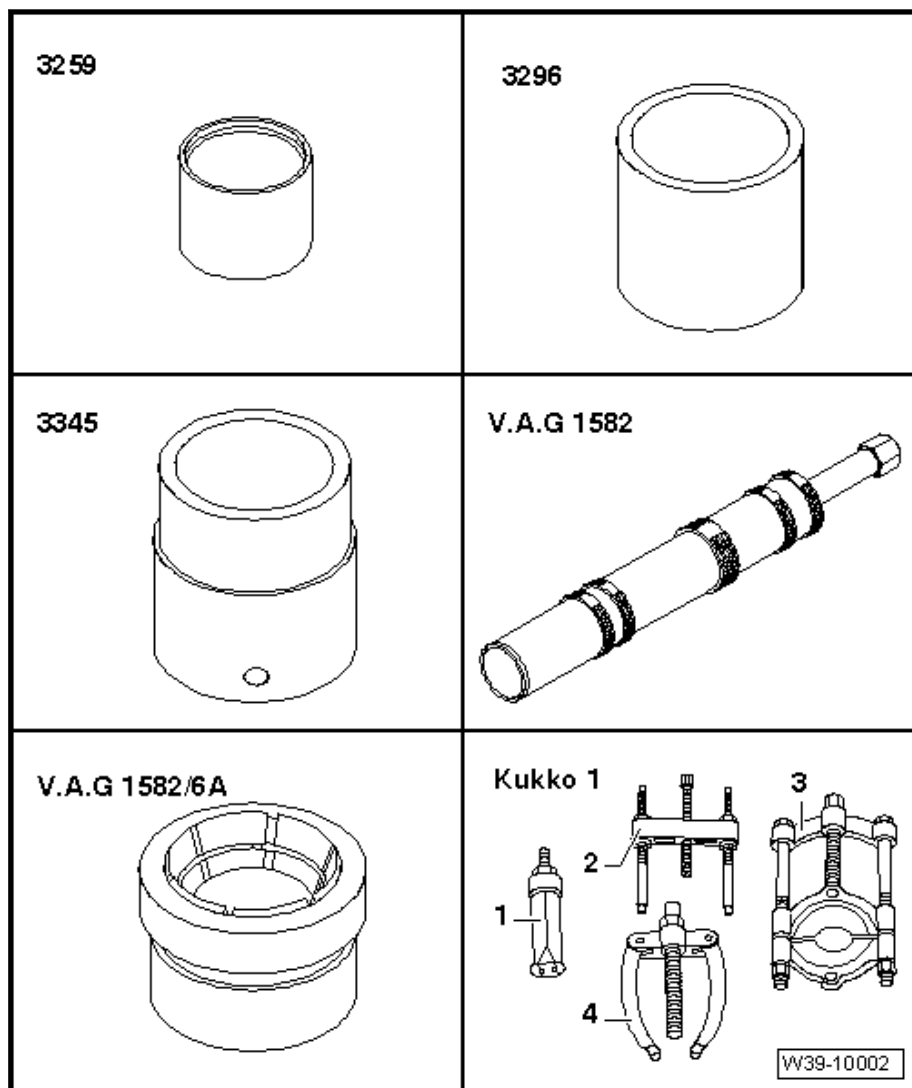
5 Differential

5.1 Differential, Disassembling and Assembling, FWD

Special tools and workshop equipment required



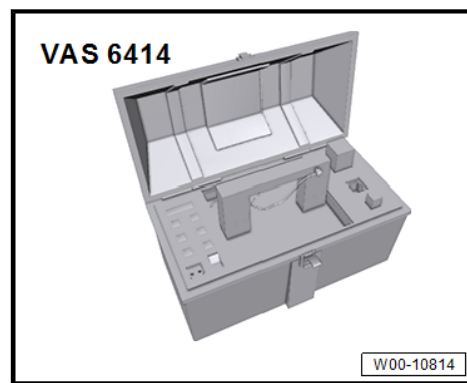
- ◆ Press Plate -VW 402-
- ◆ Press Piece - Rod -VW 408 A-
- ◆ Press Piece - Multiple Use -VW 412-
- ◆ Press Piece - 60mm -VW 415 A-
- ◆ Press Piece - Multiple Use -40 - 105-
- ◆ Press Piece - Multiple Use -3005-



- ◆ Press Piece - Bushing -3259-
- ◆ Press Piece - Reverse Gear Syncro -3296-
- ◆ Bearing Installer - Wheel Bearing -3345-
- ◆ Puller - Taper Roller Bearing -V.A.G 1582-
- ◆ Puller - Taper Roller Bearing - Adapter 6A -V.A.G 1582/6A-
- ◆ -1- Internal Puller -VAS 251 615-
- ◆ -2- Puller (Kukko 18/1) -VAS251417-
- ◆ -3- Splitter -VAS251409-
- ◆ -4- Counter Support -VAS 251 623-



◆ Inductive Heater -VAS 6414-



Note

- ◆ *Secure the transmission on the assembly stand. Refer to ⇒ [S7 securing to Engine/Transmission Holder](#), [page 250](#).*
- ◆ *Before installing, warm the inner race/tapered roller bearing to approximately 100 °C with Inductive Heater -VAS 6414-.*
- ◆ *Adjust the differential when replacing the tapered roller bearing, differential housing, transmission housing or clutch housing. Refer to ⇒ [A5.3 adjusting](#), [page 513](#).*



1 - Transmission Housing

2 - Shim

- ❑ For the differential
- ❑ Selecting thickness. Refer to ➤ [A5.3 adjusting](#), page 513.

3 - Outer Race/Tapered Roller Bearing

- ❑ Removing. Refer to ➤ [Fig. "Outer Race/Tapered Roller Bearing, Removing from Transmission Housing"](#), page 502.
- ❑ Installing. Refer to ➤ [Fig. "Outer Race/Tapered Roller Bearing, Installing in Transmission Housing"](#), page 502.

4 - Inner Race/Tapered Roller Bearing

- ❑ Removing. Refer to ➤ [Fig. "Inner Race/Tapered Roller Bearing, Removing"](#), page 500.
- ❑ Installing. Refer to ➤ [Fig. "Inner Race/Tapered Roller Bearing, Installing"](#), page 501.

5 - Differential Housing

- ❑ With riveted final drive gear wheel

6 - Inner Race/Tapered Roller Bearing

- ❑ Removing. Refer to ➤ [Fig. "Inner Race/Tapered Roller Bearing, Removing"](#), page 501.
- ❑ Installing. Refer to ➤ [Fig. "Inner Race/Tapered Roller Bearing, Installing"](#), page 501.

7 - Outer Race/Tapered Roller Bearing

- ❑ Removing. Refer to ➤ [Fig. "Outer Race/Tapered Roller Bearing, Removing from Clutch Housing"](#), page 499.
- ❑ Installing. Refer to ➤ [Fig. "Outer Race/Tapered Roller Bearing with Washer, Installing in Clutch Housing"](#), page 500.

8 - Washer

- ❑ Installed position: shoulder on inner diameter faces toward seal -Item 13- ➤ [Item 13 \(page 499\)](#)
- ❑ Allocation. Refer to the ➤ Electronic Parts Catalog (ETKA).

9 - Clutch Housing

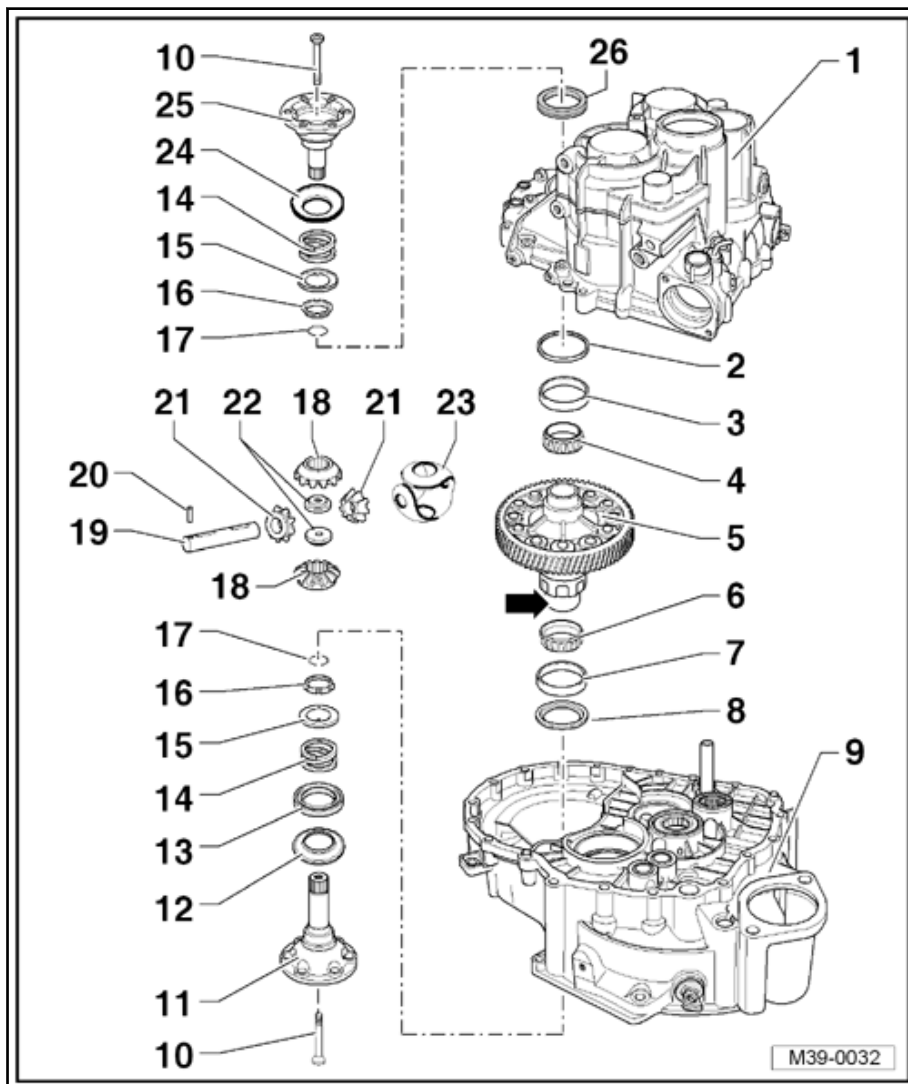
10 - Countersunk Bolt, 33 Nm

- ❑ Install with the threaded piece -Item 22- ➤ [Item 22 \(page 499\)](#)

11 - Right Flange Shaft

12 - Protective Ring

- ❑ Use a screwdriver to pry the protective ring out of the flange shaft -Item 11- ➤ [Item 11 \(page 498\)](#) while alternating from side to side.
- ❑ Installation position: depression faces away from the threaded holes in the flange shaft
- ❑ Install the protective ring all the way by hand.





- ☐ The protective ring must engage in the flange shaft.

13 - Seal

- ☐ For the right flange shaft
- ☐ Allocation. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- ☐ Replacing with the transmission installed. Refer to ⇒ [F1.2 lange Shaft Seal, Replacing", page 457](#) .

14 - Flange Shaft Pressure Spring

- ☐ Installed behind the flange shaft

15 - Thrust Washer

- ☐ Installation position: collar faces the pressure spring; tabs (if equipped) face the tapered ring

16 - Tapered Ring

- ☐ Installation position: taper faces the differential housing

17 - Circlip

- ☐ Holds the tapered ring, the thrust washer and the pressure spring when the flange shaft is removed

18 - Large Differential Bevel Gear

- ☐ Installing. Refer to ⇒ [Fig. ""Differential Bevel Gears, Installing""", page 503](#) .

19 - Differential Bevel Gear Axle

- ☐ Remove using a drift
- ☐ Installing. Refer to ⇒ [Fig. ""Differential Bevel Gears, Installing""", page 503](#) .

20 - Adapter Sleeve

- ☐ To secure the differential bevel gear axle
- ☐ Removing and Installing. Refer to ⇒ [Fig. ""Adapter Sleeve for Differential Bevel Gear Axle, Removing and Installing""", page 502](#) .

21 - Small Differential Bevel Gear

- ☐ Installing. Refer to ⇒ [Fig. ""Differential Bevel Gears, Installing""", page 503](#) .

22 - Threaded Piece

- ☐ Installing. Refer to ⇒ [Fig. ""Differential Bevel Gears, Installing""", page 503](#) .

23 - Thrust Washer Union

- ☐ Install with transmission fluid

24 - Protective Ring

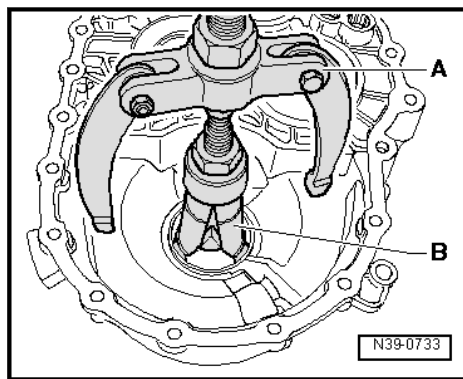
- ☐ Use a screwdriver to pry the protective ring out of the flange shaft -Item 25- ⇒ [Item 25 \(page 499\)](#) while alternating from side to side.
- ☐ Installation position: depression faces away from the threaded holes in the flange shaft
- ☐ Install the protective ring all the way by hand.
- ☐ The protective ring must engage in the flange shaft.

25 - Left Flange Shaft

26 - Seal

- ☐ For the left flange shaft
- ☐ Allocation. Refer to the ⇒ Electronic Parts Catalog (ETKA).
- ☐ Replacing with the transmission installed. Refer to ⇒ [F1.1 lange Shaft Seal, Replacing", page 455](#) .

Outer Race/Tapered Roller Bearing, Removing from Clutch Housing



A - Counter Support, for example, Counter Support - VAS251623-

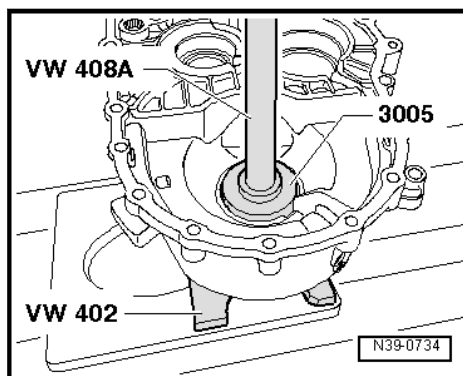
B - Internal Puller, for example, Internal Puller -VAS251615-



Note

Check the washer -Item 8- ➔ [Item 8 \(page 498\)](#) for damage after removing it and replace if necessary.

Outer Race/Tapered Roller Bearing with Washer, Installing in Clutch Housing



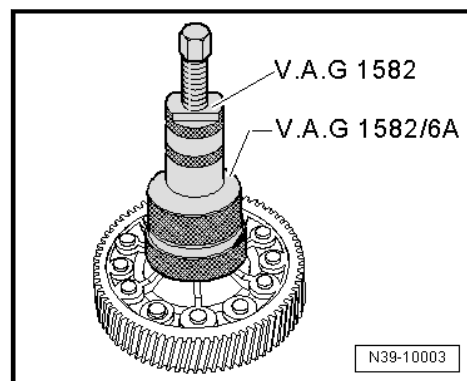
- Install the washer beforehand.



Note

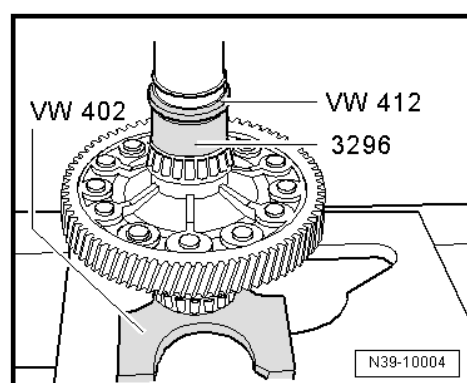
- ◆ *Note the installation position of the washer -Item 8- ➔ [Item 8 \(page 498\)](#) .*
- ◆ *The collar on the inner diameter faces the seal in the clutch housing.*

Inner Race/Tapered Roller Bearing, Removing

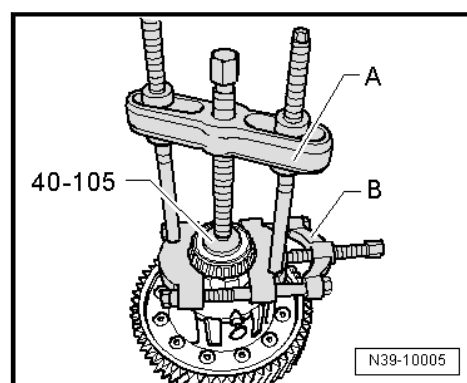


- Before installing the puller, mount the Press Piece - Multiple Use -40-105- on the differential housing.

Inner Race/Tapered Roller Bearing, Installing



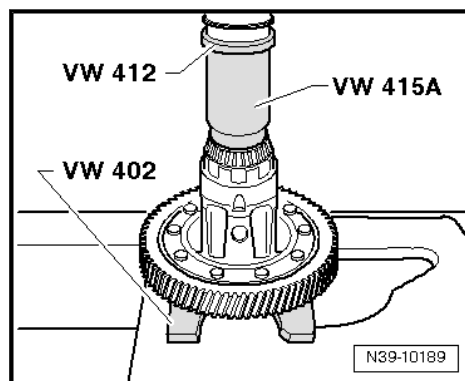
Inner Race/Tapered Roller Bearing, Removing



A - Puller, for example Puller -VAS251417-

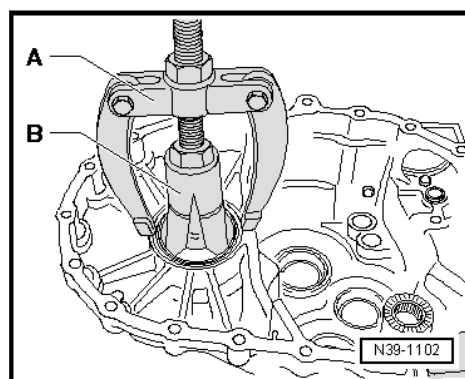
B - Separating Tool 12 to 75 mm, for example Splitter - VAS251409-

Inner Race/Tapered Roller Bearing, Installing



The cage with the tapered rollers must rotate easily when being installed.

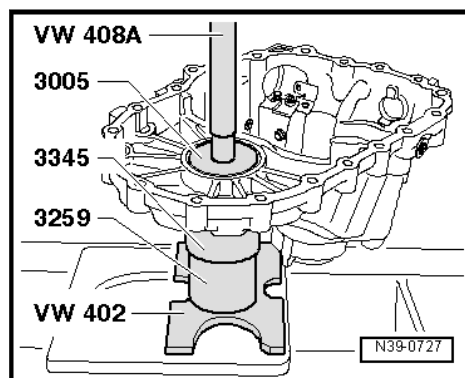
Outer Race/Tapered Roller Bearing, Removing from Transmission Housing



A - Counter Support, for example, Counter Support - VAS251623-

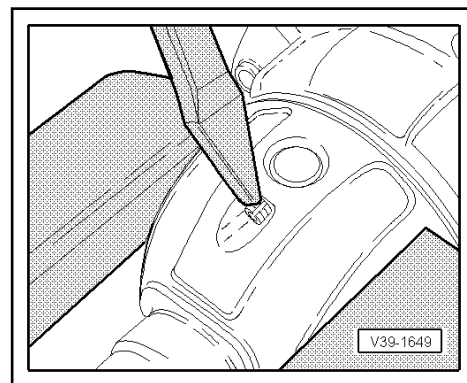
B - Internal Puller, for example, Internal Puller -VAS251615-

Outer Race/Tapered Roller Bearing, Installing in Transmission Housing



- Support the transmission housing with the Bearing Installer - Wheel Bearing -3345- directly under the bearing mount.

Adapter Sleeve for Differential Bevel Gear Axle, Removing and Installing



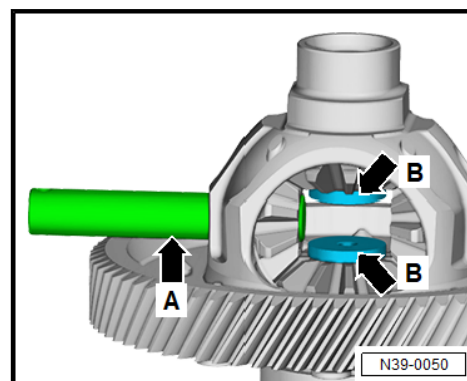
Removing

- Cover the inner race/tapered roller bearing in order to prevent possible damage and entry of shavings.
- Position a chisel in the surrounding groove in order to drive out the adapter sleeve.

Installing

- Drive into the differential housing until it stops.

Differential Bevel Gears, Installing



- Insert the thrust washer union with transmission fluid.
- Insert both large differential bevel gears and secure them (to the flange shaft, for example).
- Insert the small differential bevel gears at an offset of 180° and move them into place.
- Press the differential bevel gear -arrow A- up to the first small differential bevel gear.
- Insert the threaded pieces -B arrows- into the large differential bevel gears.

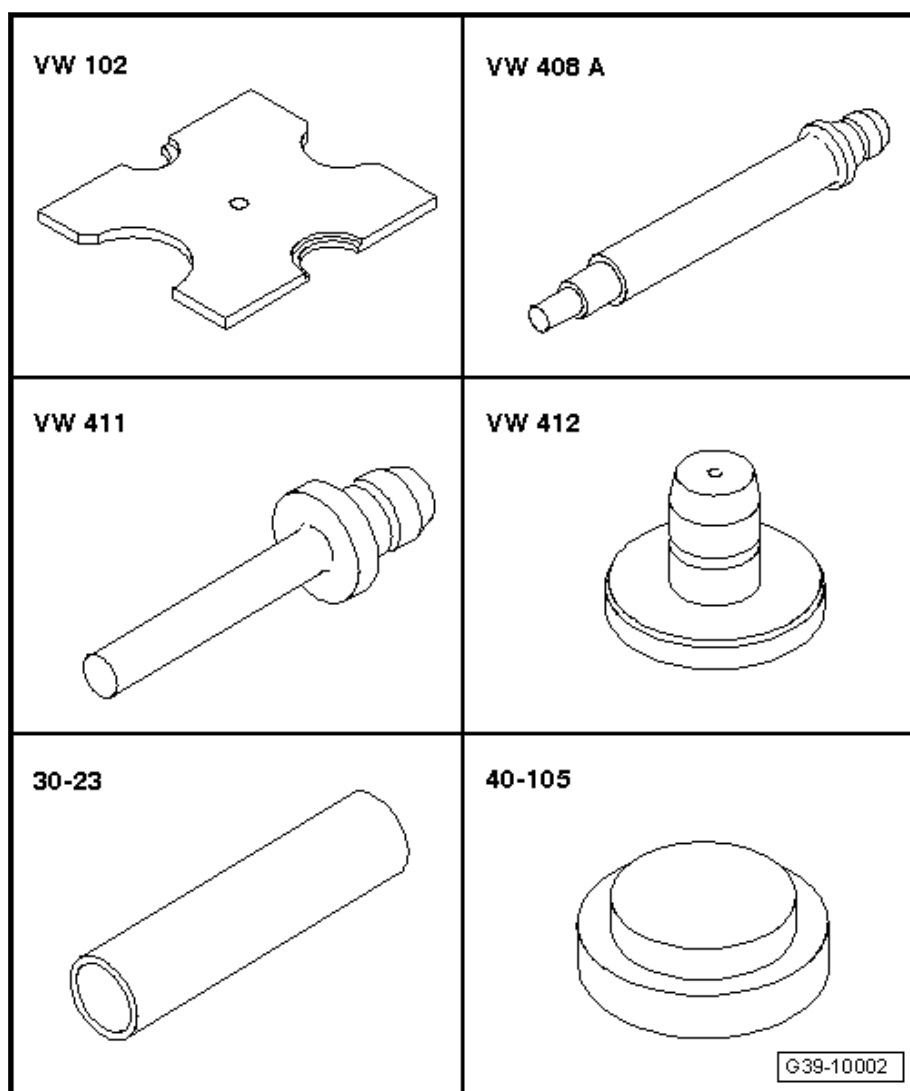
Installed position: shoulder faces the differential bevel gear

- Install the differential bevel gear axle up the end position and secure it with a new adapter sleeve.

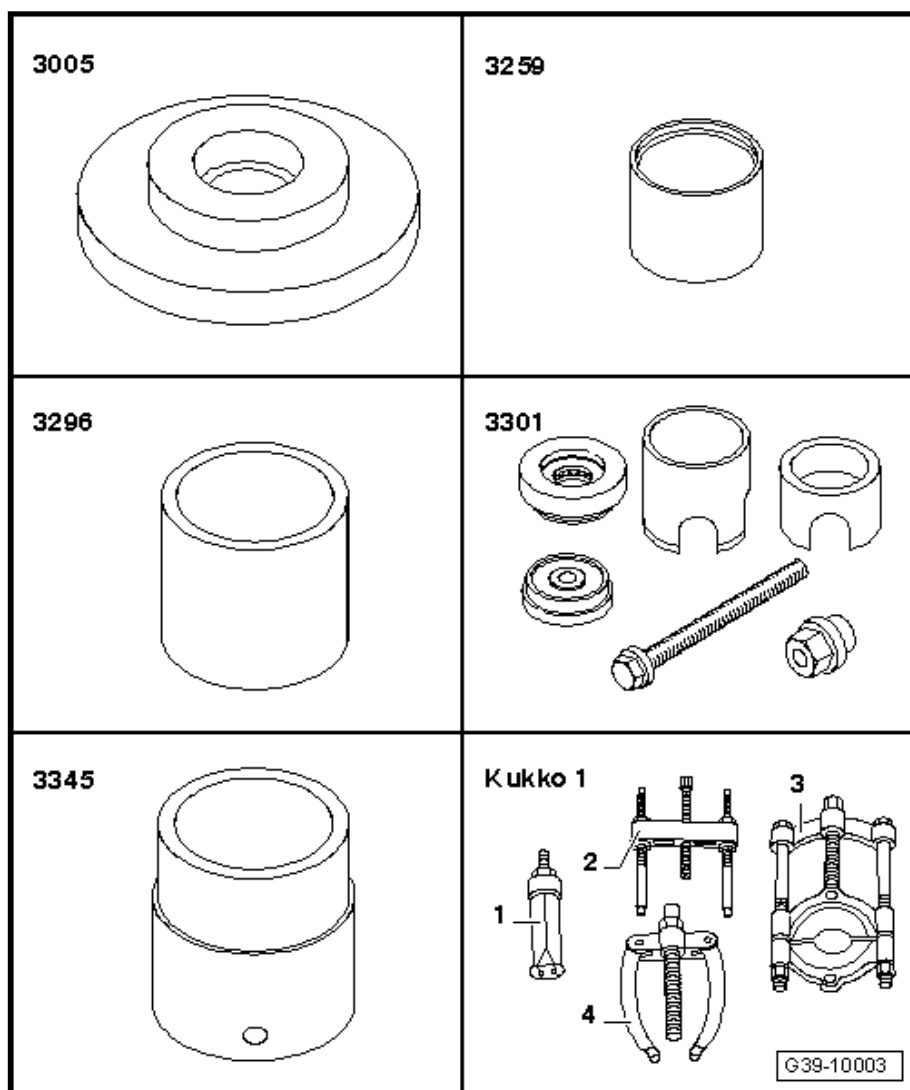
5.2 Differential, Disassembling and Assembling, AWD



**Special tools and workshop
equipment required**



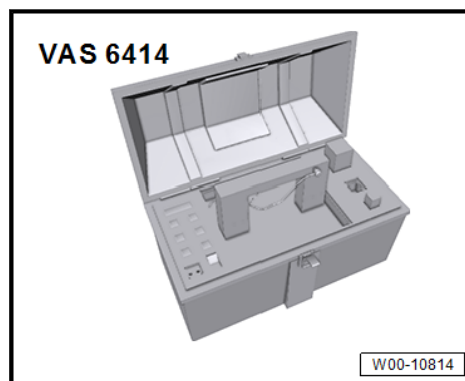
- ◆ Press Plate -VW 402-
- ◆ Press Piece - Rod -VW 408 A-
- ◆ Press Piece - Rod -VW 411-
- ◆ Press Piece - Multiple Use -VW 412-
- ◆ Press Piece - Multiple Use -30 - 23-
- ◆ Press Piece - Multiple Use -40 - 105-



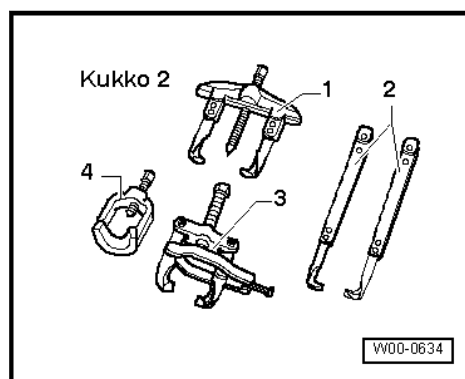
- ◆ Press Piece - Multiple Use -3005-
- ◆ Press Piece - Bushing -3259-
- ◆ Press Piece - Reverse Gear Syncro -3296-
- ◆ Subframe Bushing Tool Kit -3301-
- ◆ Bearing Installer - Wheel Bearing -3345-
- ◆ -1- Internal Puller -VAS 251 615-
- ◆ -2- Puller (Kukko 18/1) -VAS251417-
- ◆ -3- Splitter -VAS251409-
- ◆ -4- Counter Support -VAS 251 623-



◆ Inductive Heater -VAS 6414-



◆ -3- Puller - Kukko 2-Arm w/Side Clamp, 100mm Width, 100mm Length -Kukko 204/2-



Note

- ◆ *Secure the transmission on the assembly stand. Refer to ⇒ [S7 securing to Engine/Transmission Holder](#), page 250.*
- ◆ *Before installing, warm the inner race/tapered roller bearing to approximately 100 °C with Inductive Heater -VAS 6414-.*
- ◆ *Replace both tapered roller bearings together.*
- ◆ *Adjust the differential when replacing the tapered roller bearing, differential housing, transmission housing or clutch housing. Refer to ⇒ [A5.3 djusting](#), page 513.*

1 - Transmission Housing

2 - Shim

- ☐ For the differential
- ☐ Selecting thickness. Refer to ➤ [A5.3 djusting", page 513](#) .

3 - Outer Race/Tapered Roller Bearing

- ☐ Removing. Refer to ➤ [Fig. "Outer Race/Tapered Roller Bearing, Removing from Transmission Housing", page 511](#) .
- ☐ Installing. Refer to ➤ [Fig. "Outer Race/Tapered Roller Bearing, Installing in Transmission Housing", page 512](#) .

4 - Inner Race/Tapered Roller Bearing

- ☐ Removing. Refer to ➤ [Fig. "Inner Race/Tapered Roller Bearing, Removing", page 510](#) .
- ☐ Installing. Refer to ➤ [Fig. "Heat the inner race/tapered roller bearing and press on it", page 510](#) .

5 - Differential Housing

- ☐ With riveted final drive gear wheel

6 - Inner Race/Tapered Roller Bearing

- ☐ Removing. Refer to ➤ [Fig. "Inner Race/Tapered Roller Bearing, Removing", page 510](#) .
- ☐ Installing. Refer to ➤ [Fig. "Inner Race/Tapered Roller Bearing, Installing", page 511](#) .

7 - Outer Race/Tapered Roller Bearing

- ☐ Removing. Refer to ➤ [Fig. "Outer Race/Tapered Roller Bearing, Removing from Clutch Housing", page 509](#) .
- ☐ Installing. Refer to ➤ [Fig. "Outer Race/Tapered Roller Bearing with Washer, Installing in Clutch Housing", page 509](#) .

8 - Washer

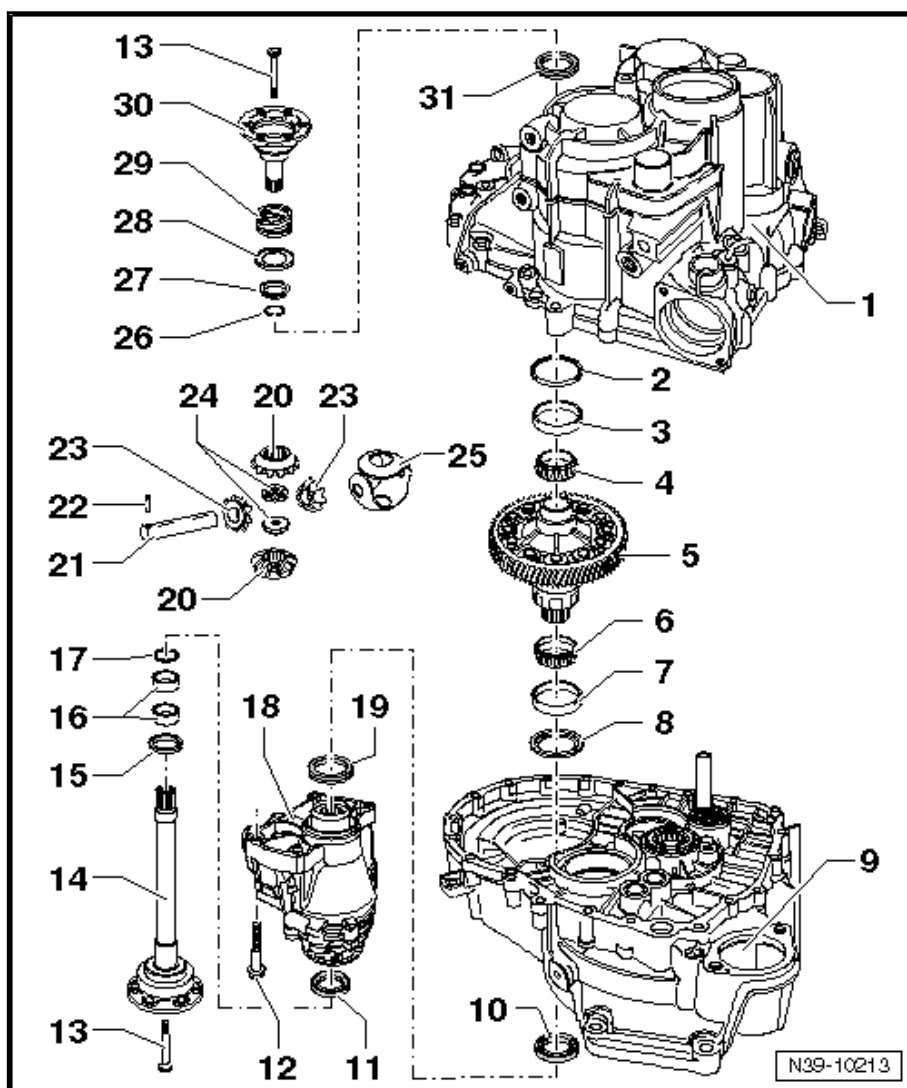
- ☐ Installation position: the collar on the inner diameter faces the seal in the clutch housing
- ☐ Allocation. Refer to the ➤ Electronic Parts Catalog (ETKA).

9 - Clutch Housing

10 - Seal

- ☐ Installed in the manual transmission, between the manual transmission and bevel box
- ☐ Replace with the transmission installed. Refer to ➤ [B2.3 ox Seal, Replacing, with Manual Transmission Installed", page 465](#) .
- ☐ Remove using the Puller - Crankshaft/Power Steering Seal - 2 -T20143/2- or Puller - Seal Lever -VW 681-
- ☐ With the transmission disassembled, it can be installed until it stops using the Seal Installer - Crankshaft -T40007-

11 - Seal





- ☐ For the right flange shaft
- ☐ The left and right diameters are different
- ☐ Replace with manual transmission installed with bevel box. Refer to [⇒ F2.2 lange Shaft Seal, Replacing", page 461](#) .

12 - Hex Bolt -Item 17- [⇒ Item 17 \(page 314\)](#)

13 - Countersunk Bolt, 33 Nm

- ☐ Install with the threaded piece -Item 24- [⇒ Item 24 \(page 508\)](#)

14 - Right Flange Shaft

- ☐ Removing and Installing. Refer to [⇒ F2.2 lange Shaft Seal, Replacing", page 461](#) .

15 - Seal

- ☐ To replace, remove the needle bearing (polygon bearing -Item 16- [⇒ Item 16 \(page 508\)](#))

16 - Needle Bearing (Polygon Bearing)

- ☐ Replacing. Refer to [⇒ B3.5 earing \(Polygon Bearing\) and Seal on Right Flange Shaft, Replacing", page 487](#) .

17 - Circlip

- ☐ Replace after removing
- ☐ For the needle bearing (polygon bearing)
- ☐ Insert in the groove all around the flange shaft

18 - Bevel Box

- ☐ Seals, flange shaft bearing and output flange bearing inside the bevel box. Refer to [⇒ -3 Seals, Flange Shaft Bearing and Output Flange Bearing Inside the Bevel Box", page 468](#) .

19 - Seal

- ☐ Between the bevel box and manual transmission, installed in the bevel box
- ☐ Replace with bevel box removed. Refer to [⇒ o3.2 n Bevel Box between Manual Transmission and Bevel Box, Replacing", page 473](#) .

20 - Large Differential Bevel Gear

- ☐ Installing. Refer to [⇒ Fig. ""Differential Bevel Gears, Installing"" , page 512](#) .

21 - Differential Bevel Gear Axle

- ☐ Removing. Refer to [⇒ Fig. ""Differential Bevel Gear Axle and Adapter Sleeve, Removing"" , page 512](#) .
- ☐ Installing. Refer to [⇒ Fig. ""Differential Bevel Gears, Installing"" , page 512](#) .

22 - Adapter Sleeve

- ☐ To secure the differential bevel gear axle
- ☐ Removing. Refer to [⇒ Fig. ""Differential Bevel Gear Axle and Adapter Sleeve, Removing"" , page 512](#) .
- ☐ Install new adapter sleeve so that it is flush. Refer to [⇒ Fig. ""Adapter Sleeve, Installing"" , page 513](#) .

23 - Small Differential Bevel Gear

- ☐ Removing and Installing. Refer to [⇒ Fig. ""Differential Bevel Gears, Installing"" , page 512](#) .

24 - Threaded Piece

- ☐ Installing. Refer to [⇒ Fig. ""Differential Bevel Gears, Installing"" , page 512](#) .

25 - Thrust Washer Union

- ☐ Install with transmission fluid

26 - Circlip

- ☐ Holds the tapered ring, the thrust washer and the pressure spring when the flange shaft is removed

27 - Tapered Ring

- ☐ With grooves for the thrust washer
- ☐ Installation position: taper faces the differential housing

28 - Thrust Washer



- ☐ Installation position: collar faces the pressure spring; tabs face the tapered ring

29 - Left Flange Shaft Pressure Spring

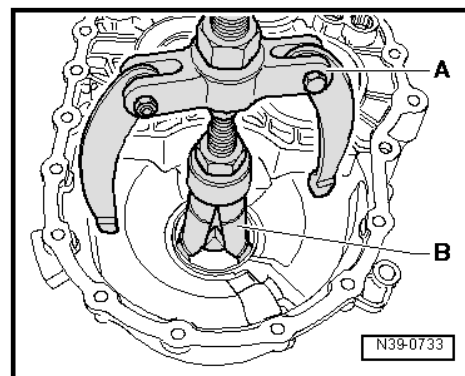
- ☐ Installed behind left flange shaft

30 - Left Flange Shaft

31 - Seal

- ☐ For the left flange shaft
- ☐ The left and right diameters are different
- ☐ Replacing with the transmission installed. Refer to [⇒ F2.1 lange Shaft Seal, Replacing", page 461](#) .

Outer Race/Tapered Roller Bearing, Removing from Clutch Housing



A - Counter Support, for example, Counter Support - VAS251623-

B - Internal Puller, for example, Internal Puller -VAS251615-

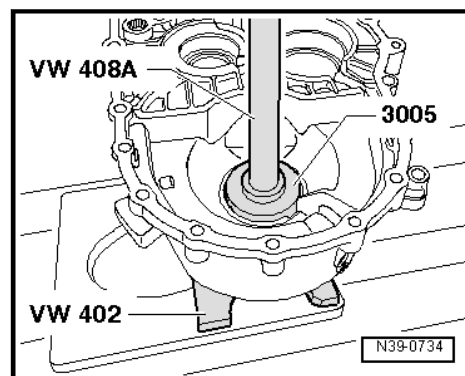
- Tension the internal puller -B- between the outer race/tapered roller bearing and washer.



Note

Check the washer -Item 8- [⇒ Item 8 \(page 507\)](#) for damage after removing it and replace if necessary.

Outer Race/Tapered Roller Bearing with Washer, Installing in Clutch Housing



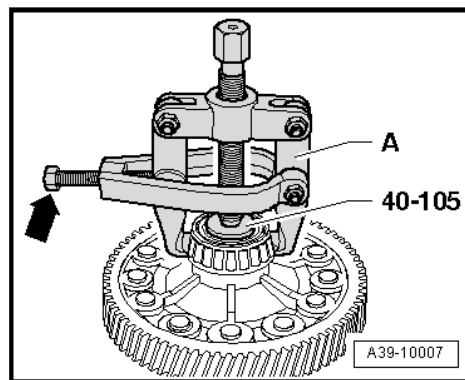
- Install the washer -Item 8- [⇒ Item 8 \(page 507\)](#) beforehand.



Note

- ◆ Note the installation position of the washer.
- ◆ The collar on the inner diameter faces the seal in the clutch housing.

Inner Race/Tapered Roller Bearing, Removing



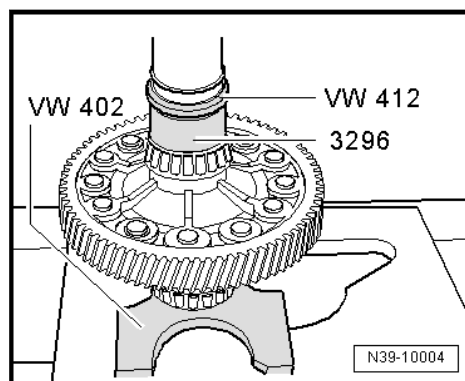
- Place the Press Piece - Multiple Use -40-105- on the differential housing.
- Tension the Puller, for example, Puller - Kukko 2-Arm w/Side Clamp, 100mm Width, 100mm Length -Kukko 204/2- near the flattened sides of the differential housing under the inner race/tapered roller bearing.



Note

When pulling off the inner race, make sure that the hooks do not bend outward; if necessary, re-tighten bolt -arrow-.

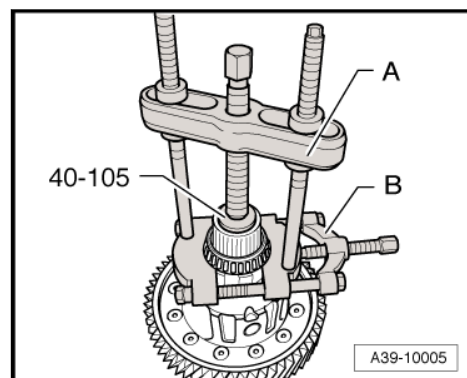
Heat the inner race/tapered roller bearing and press on it



WARNING

Wear safety gloves.

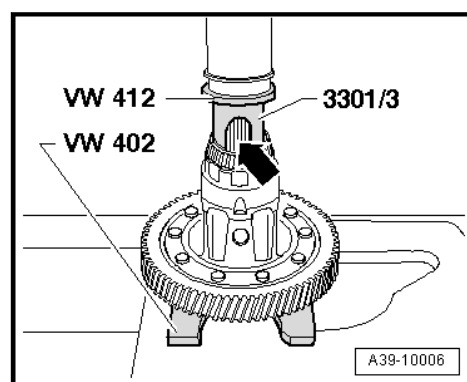
Inner Race/Tapered Roller Bearing, Removing



A - Puller, for example Puller -VAS251417-

B - Separating Tool, for example Splitter -VAS251409-

Inner Race/Tapered Roller Bearing, Installing

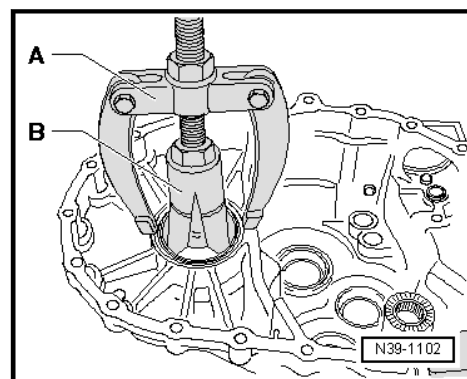


WARNING

Wear safety gloves.

- Place the Subframe Bushing Tool Kit - Assembly Tool 3 -3301/3- on the Subframe Bushing Tool Kit -3301- with the notch -arrow- (larger inner diameter) on inner race/tapered roller bearing.

Outer Race/Tapered Roller Bearing, Removing from Transmission Housing

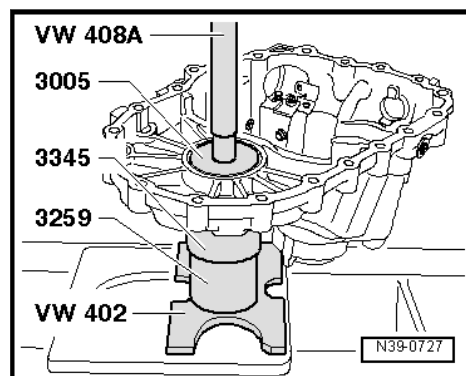


A - Counter Support, for example, Counter Support - VAS251623-

B - Internal Puller, for example, Internal Puller -VAS251615-

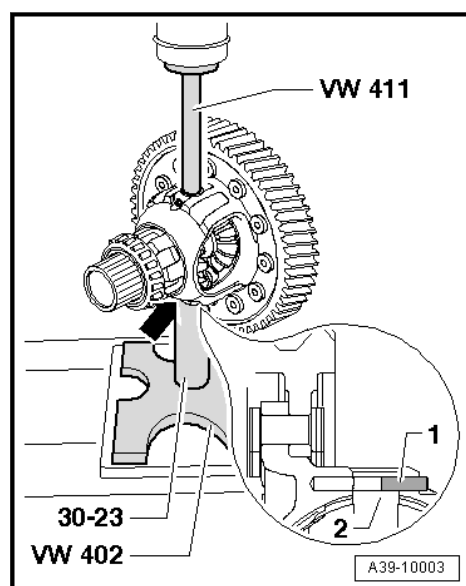


Outer Race/Tapered Roller Bearing, Installing in Transmission Housing



- Support the transmission housing with the Bearing Installer - Wheel Bearing -3345- directly under the bearing mount.

Differential Bevel Gear Axle and Adapter Sleeve, Removing



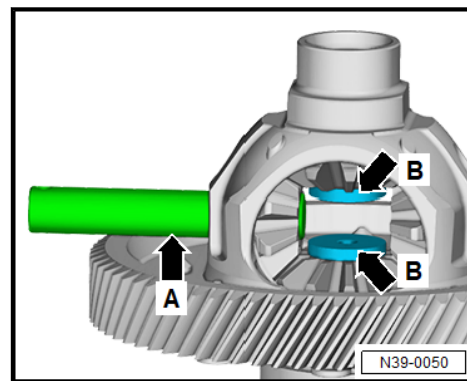
- First drive the adapter sleeve -1- into the differential bevel gear axle -2- so that it is flush.
- Mount the differential under the press with the adapter sleeve -arrow- facing the Press Piece - Multiple Use -30 - 23-.
- Then remove the differential bevel gear axle.



Note

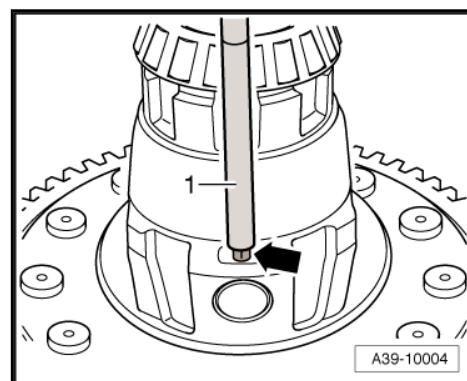
If necessary, remove the sheared parts of the adapter sleeve from the differential bevel box housing and remove the differential bevel gear axle.

Differential Bevel Gears, Installing



- Insert the thrust washer union with transmission fluid.
- Insert both large differential bevel gears and secure them (to the flange shaft, for example).
- Insert the small differential bevel gears at an offset of 180° and move them into place.
- Press the differential bevel gear axle -arrow A- up to the first small differential bevel gear.
- Insert the threaded pieces -B arrows- into the large differential bevel gears.
- Installed position: shoulder faces the differential bevel gear
- Install the differential bevel gear axle up to the final position and secure it with a new adapter sleeve. Refer to ➤ [Fig. "Adapter Sleeve, Installing", page 513](#).

Adapter Sleeve, Installing

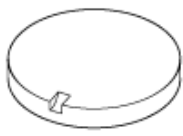
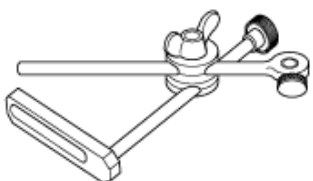
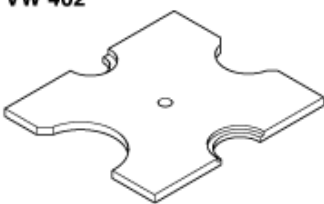
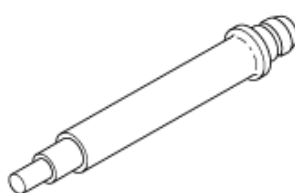
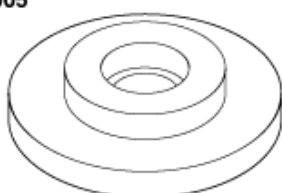



- Use a drift -1- to drive in the new adapter sleeve -arrow- so that it is flush with the differential housing.

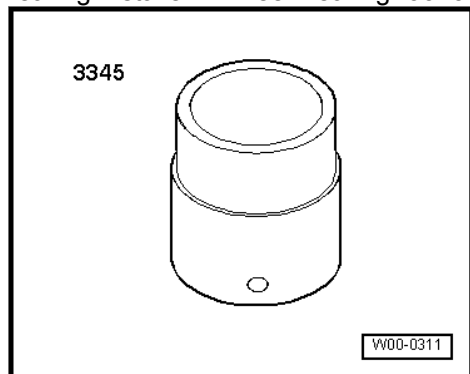
5.3 Differential, Adjusting



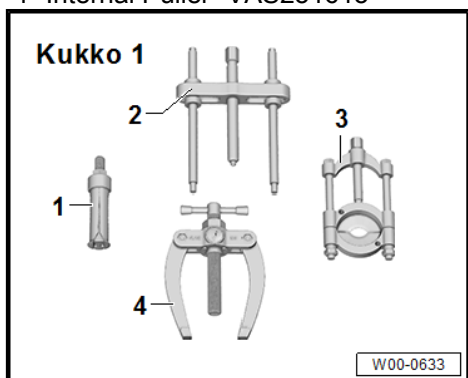
**Special tools and workshop
equipment required**

VW 385/17 	VW 387 
VW 402 	VW 408 A 
3005 	3259  <div>G39-0109</div>

- ◆ Measuring Set - Magnetic Plate - 50mm -VW 385/17-
- ◆ Dial Indicator Holder -VW 387-
- ◆ Press Plate -VW 402-
- ◆ Press Piece - Rod -VW 408 A-
- ◆ Press Piece - Multiple Use -3005-
- ◆ Press Piece - Bushing -3259-
- ◆ Bearing Installer - Wheel Bearing -3345-

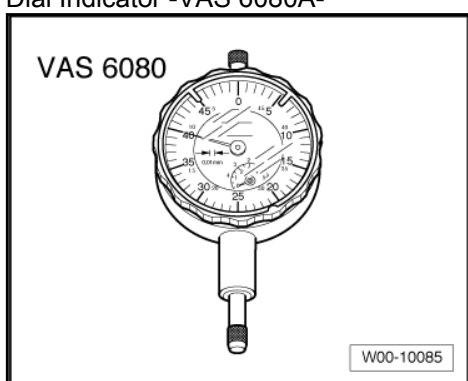


◆ -1- Internal Puller -VAS251615-



◆ -4- Counter Support -VAS 251 623-

◆ Dial Indicator -VAS 6080A-



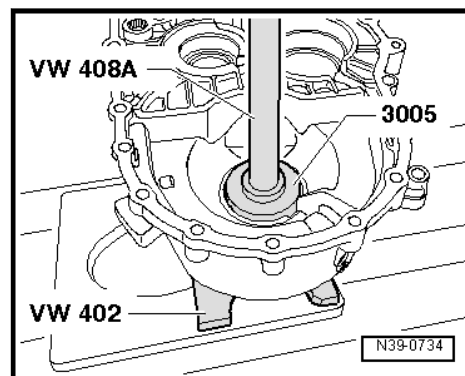
◆ 30 mm dial gauge extension

A new differential adjustment is required when the following components have been replaced:

- ◆ Transmission Housing
- ◆ Clutch Housing
- ◆ Differential housing or
- ◆ Differential tapered roller bearing

Adjustment Overview. Refer to ➤ [O4 verview](#)", page 494 .

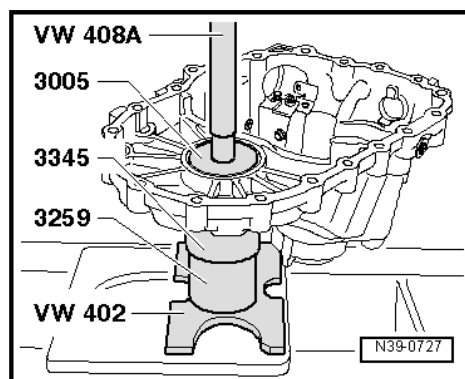
- Press the outer race/tapered roller bearing with the washer into the clutch housing.



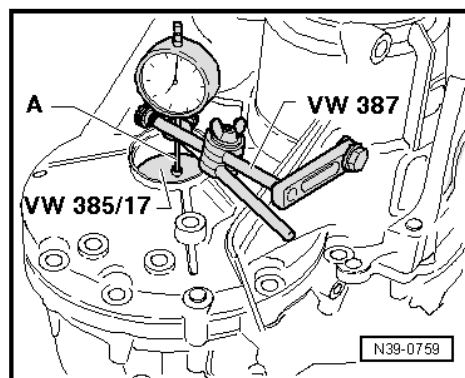


Note

- ♦ *Note the installation position of the washer.*
- ♦ *The collar on the inner diameter faces the seal in the clutch housing.*
- Press the outer race/tapered roller bearing without the shim into the transmission housing.



- Insert the differential into the clutch housing.
- Position the transmission housing and tighten the five bolts to the tightening specification -Item 13- ➔ [Item 13 \(page 308\)](#) and -Item 14- ➔ [Item 14 \(page 308\)](#) .
- Push the differential toward the clutch housing and rotate eight times at the same time.
- Press differential in direction of transmission housing and rotate eight times at the same time.
- Attach the gauge to the transmission housing and set it to "0" with 1 mm of pretension.



A - 30 mm dial gauge extension

- Move the differential up and down, read the play on the dial gauge and note it (example: 0.70 mm).

5.3.1 Shim, Determining

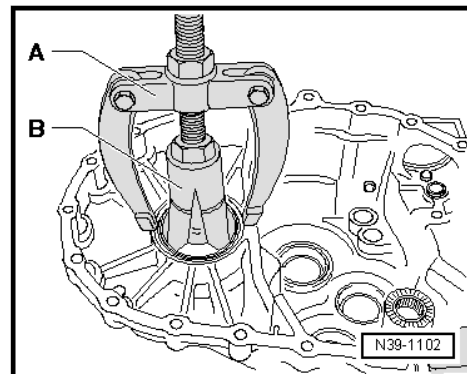
The specified bearing pre-load is obtained by adding a constant pre-load figure of 0.25 mm to the reading obtained.

Example:

Measured value	0.70 mm
+ preload (constant value)	0.25 mm

Adjusting shim thickness = 0.95 mm

- Remove the transmission housing.
- Remove the outer race/tapered roller bearing from the transmission housing.



A - Counter Support, for example, Counter Support - VAS251623-

B - Internal Puller, for example, Internal Puller -VAS251615-

- Determine the shim part number using the ⇒ Electronic Parts Catalog (ETKA).
- Install the shim with the correct thickness, thickest shim first.

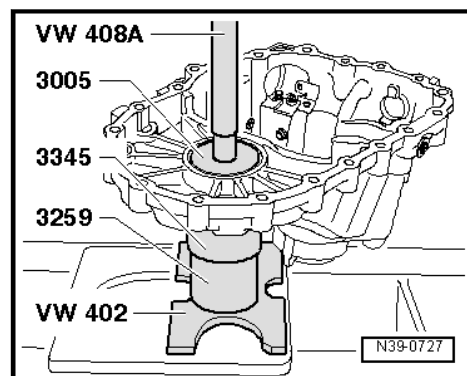
The following shims are available:

Shim thickness (mm)			
0.65	0.85	1.05	1.25
0.70	0.90	1.10	
0.75	0.95	1.15	
0.80	1.00	1.20	

If the measured shim thickness is larger than those listed in the table, then install two shims that add up to the necessary thickness. Insert the thicker shim first.

Tolerance variations make it possible to find the exact shim thickness required.

- Install the outer race again and tighten the transmission housing to the tightening specification -Item 13- ⇒ [Item 13 \(page 308\)](#) and -Item 14- ⇒ [Item 14 \(page 308\)](#) .



Cautions & Warnings

Please read these WARNINGS and CAUTIONS before proceeding with maintenance and repair work. You must answer that you have read and you understand these WARNINGS and CAUTIONS before you will be allowed to view this information.

- If you lack the skills, tools and equipment, or a suitable workshop for any procedure described in this manual, we suggest you leave such repairs to an authorized Volkswagen retailer or other qualified shop. We especially urge you to consult an authorized Volkswagen retailer before beginning repairs on any vehicle that may still be covered wholly or in part by any of the extensive warranties issued by Volkswagen.
- Disconnect the battery negative terminal (ground strap) whenever you work on the fuel system or the electrical system. Do not smoke or work near heaters or other fire hazards. Keep an approved fire extinguisher handy.
- Volkswagen is constantly improving its vehicles and sometimes these changes, both in parts and specifications, are made applicable to earlier models. Therefore, part numbers listed in this manual are for reference only. Always check with your authorized Volkswagen retailer parts department for the latest information.
- Any time the battery has been disconnected on an automatic transmission vehicle, it will be necessary to reestablish Transmission Control Module (TCM) basic settings using the Volkswagen Factory Approved Scan Tool (ST).
- Never work under a lifted vehicle unless it is solidly supported on stands designed for the purpose. Do not support a vehicle on cinder blocks, hollow tiles or other props that may crumble under continuous load. Never work under a vehicle that is supported solely by a jack. Never work under the vehicle while the engine is running.
- For vehicles equipped with an anti-theft radio, be sure of the correct radio activation code before disconnecting the battery or removing the radio. If the wrong code is entered when the power is restored, the radio may lock up and become inoperable, even if the correct code is used in a later attempt.
- If you are going to work under a vehicle on the ground, make sure that the ground is level. Block the wheels to keep the vehicle from rolling. Disconnect the battery negative terminal (ground strap) to prevent others from starting the vehicle while you are under it
- Do not attempt to work on your vehicle if you do not feel well. You increase the danger of injury to yourself and others if you are tired, upset or have taken medicine or any other substances that may impair you or keep you from being fully alert.
- Never run the engine unless the work area is well ventilated. Carbon monoxide (CO) kills.
- Always observe good workshop practices. Wear goggles when you operate machine tools or work with acid. Wear goggles, gloves and other protective clothing whenever the job requires working with harmful substances.
- Tie long hair behind your head. Do not wear a necktie, a scarf, loose clothing, or a necklace when you work near machine tools or running engines. If your hair, clothing, or jewelry were to get caught in the machinery, severe injury could result.
- Do not re-use any fasteners that are worn or deformed in normal use. Some fasteners are designed to be used only once and are unreliable and may fail if used a second time. This includes, but is not limited to, nuts, bolts, washers, circlips and cotter pins. Always follow the recommendations in this manual - replace these fasteners with new parts where indicated, and any other time it is deemed necessary by inspection.

Cautions & Warnings

- Illuminate the work area adequately but safely. Use a portable safety light for working inside or under the vehicle. Make sure the bulb is enclosed by a wire cage. The hot filament of an accidentally broken bulb can ignite spilled fuel or oil.
- Friction materials such as brake pads and clutch discs may contain asbestos fibers. Do not create dust by grinding, sanding, or by cleaning with compressed air. Avoid breathing asbestos fibers and asbestos dust. Breathing asbestos can cause serious diseases such as asbestosis or cancer, and may result in death.
- Finger rings should be removed so that they cannot cause electrical shorts, get caught in running machinery, or be crushed by heavy parts.
- Before starting a job, make certain that you have all the necessary tools and parts on hand. Read all the instructions thoroughly; do not attempt shortcuts. Use tools that are appropriate to the work and use only replacement parts meeting Volkswagen specifications. Makeshift tools, parts and procedures will not make good repairs.
- Catch draining fuel, oil or brake fluid in suitable containers. Do not use empty food or beverage containers that might mislead someone into drinking from them. Store flammable fluids away from fire hazards. Wipe up spills at once, but do not store the oily rags, which can ignite and burn spontaneously.
- Use pneumatic and electric tools only to loosen threaded parts and fasteners. Never use these tools to tighten fasteners, especially on light alloy parts. Always use a torque wrench to tighten fasteners to the tightening torque listed.
- Keep sparks, lighted matches, and open flame away from the top of the battery. If escaping hydrogen gas is ignited, it will ignite gas trapped in the cells and cause the battery to explode.
- Be mindful of the environment and ecology. Before you drain the crankcase, find out the proper way to dispose of the oil. Do not pour oil onto the ground, down a drain, or into a stream, pond, or lake. Consult local ordinances that govern the disposal of wastes.
- The air-conditioning (A/C) system is filled with a chemical refrigerant that is hazardous. The A/C system should be serviced only by trained automotive service technicians using approved refrigerant recovery/recycling equipment, trained in related safety precautions, and familiar with regulations governing the discharging and disposal of automotive chemical refrigerants.
- Before doing any electrical welding on vehicles equipped with anti-lock brakes (ABS), disconnect the battery negative terminal (ground strap) and the ABS control module connector.
- Do not expose any part of the A/C system to high temperatures such as open flame. Excessive heat will increase system pressure and may cause the system to burst.
- When boost-charging the battery, first remove the fuses for the Engine Control Module (ECM), the Transmission Control Module (TCM), the ABS control module, and the trip computer. In cases where one or more of these components is not separately fused, disconnect the control module connector(s).
- Some of the vehicles covered by this manual are equipped with a supplemental restraint system (SRS), that automatically deploys an airbag in the event of a frontal impact. The airbag is operated by an explosive device. Handled improperly or without adequate safeguards, it can be accidentally activated and cause serious personal injury. To guard against personal injury or airbag system failure, only trained Volkswagen Service technicians should test, disassemble or service the airbag system.

Cautions & Warnings

- Do not quick-charge the battery (for boost starting) for longer than one minute, and do not exceed 16.5 volts at the battery with the boosting cables attached. Wait at least one minute before boosting the battery a second time.
- Never use a test light to conduct electrical tests of the airbag system. The system must only be tested by trained Volkswagen Service technicians using the Volkswagen Factory Approved Scan Tool (ST) or an approved equivalent. The airbag unit must never be electrically tested while it is not installed in the vehicle.
- Some aerosol tire inflators are highly flammable. Be extremely cautious when repairing a tire that may have been inflated using an aerosol tire inflator. Keep sparks, open flame or other sources of ignition away from the tire repair area. Inflate and deflate the tire at least four times before breaking the bead from the rim. Completely remove the tire from the rim before attempting any repair.
- When driving or riding in an airbag-equipped vehicle, never hold test equipment in your hands or lap while the vehicle is in motion. Objects between you and the airbag can increase the risk of injury in an accident.

I have read and I understand these Cautions and Warnings.